GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

TECHNICAL SPECIFICATIONS
AND
BID DOCUMENTS

TUBULAR STEEL STRUCTURES
FOR THE
DICKINSON AVENUE TO FROG LEVEL ROAD
115 kV TRANSMISSION LINE
R-2250 NCDOT RELOCATION

REQUEST FOR PRICES

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FOR THE
DICKINSON AVENUE TO FROG LEVEL ROAD
115 kV TRANSMISSION LINE
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REQUEST FOR PRICES

5/17/17

Booth & Associates, LLC
Consulting Engineers
5811 Glenwood Avenue
Raleigh, North Carolina 27612
Firm License No.: F-0221

GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

TECHNICAL SPECIFICATIONS AND BID DOCUMENTS

TUBULAR STEEL STRUCTURES FOR THE DICKINSON AVENUE TO FROG LEVEL ROAD 115 kV TRANSMISSION LINE R-2250 NCDOT RELOCATION

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NOTICE TO PROSPECTIVE BIDDERS

Sealed Proposals for the furnishing and deliver of all materials and equipment (except materials and equipment specified to be furnished by the Owner) complete and conforming to the bid documents for Tubular Steel Structures for the Dickinson Avenue to Frog Level 115 kV Transmission Line R-2250 NCDOT Relocation, as set forth in the Bid Schedules, will be received by Greenville Utilities Commission of Greenville, North Carolina (hereinafter referred to as the Owner) at the offices of the Procurement Coordinator, Greenville Utilities Commission, 401 S. Greene Street, Greenville, North Carolina, 27834, on or before **2:00 PM, local time, WEDNESDAY, June 21ST, 2017,** at which time the Proposals will be opened and read. Any Proposal received subsequent to that time will be promptly returned to the Bidder unopened. Bids submitted in a fax or e-mail in response to this Invitation for Bids will not be acceptable. **All questions concerning this bid must be received by Wednesday, June 14, 2017.**

Instructions for submitting bids and complete specifications will be available in the Office of the Procurement Coordinator, Greenville Utilities Commission, 401 South Greene Street, Greenville, North Carolina 27834 during regular office hours, which are 8:30 AM – 5:00 PM Monday through Friday. Greenville Utilities Commission reserves the right to reject any or all bids.

Each bidder must submit a proposal on the enclosed bid forms. **The bid must be signed by an authorized official of the firm. Return only the attached Proposal Form. Do not return the Advertisement for Bids, Instructions to Bidders or Specifications.**

Bids must be in sealed envelopes clearly marked on the outside with the name of the bid and the bid opening date and time. Bid shall be addressed to CLEVE HADDOCK, CLGPO. PROCURMENT COORDINATOR, GREENVILLE UTILITIES COMMISSION, 401 SOUTH GREENE STREET, GREENVILLE, NORTH CAROLINA 27834.

Bids will be opened promptly and read at the hour and on the date set forth in the advertisement in the Office of the Procurement Coordinator, Greenville Utilities Main Office, 401 South Greene Street, Greenville, North Carolina 27834. Bidders or their authorized agents are invited to be present.

Prior to the submission of the Proposal, the Bidder shall make and shall be deemed to have made a careful examination of the bid documents on file with the Owner and with the Engineer and of all other matters that may affect the cost and the time of the work.

The name and address of the Bidder, its license number (if a license is required by the State), and the following description must appear on the envelope in with the Proposal is submitted **"BID FOR THE TUBULAR STEEL STRUCTURES FOR THE DICKINSON AVENUE TO FROG LEVEL ROAD 115 kV TRANSMISSION LINE R-2250 NCDOT RELOCATION NOT TO BE OPENED UNTIL 2:00 PM, local time, WEDNESDAY, June 21ST, 2017".**

Each Proposal shall be accompanied by cash, cashier's check, or certified check drawn on a bank insured with the Federal Deposit Insurance Corporation or the Savings Association Insurance Fund, payable to the Owner, in an amount not less than five percent (5%) of the total bid as a guarantee that a Purchase Order, if awarded, will be accepted. In lieu thereof, a Bid Bond may be submitted by the Bidder in an amount not less than five percent (5%) of the total bid (see attached Bid Bond form). The total bid price for which the five percent (5%) applies shall be the total of all schedules.

The Owner reserves the rights to (1) waive minor irregularities or minor errors in any Proposal if it appears to the Owner that such irregularities or errors were made through inadvertence. Any such irregularities or errors so waived must be corrected on the Proposal prior to its acceptance by the Owner; (2) reject any or all Proposals and to hold any or all Proposals for a period of sixty (60) days from the date of opening thereof;

(3) accept the bid, in its opinion, that represents the lowest responsible, responsive bid from the standpoint of quality, performance, delivery and price; and (4) award Purchase Order(s) to Bidder(s) for any Schedule(s) individually or collectively from the Bid Schedules.

GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

By: Anthony C. Cannon Date: _____
General Manager / CEO

DEFINITIONS

Whenever the following terms or pronoun in place of them are used in these "Instructions to Bidders", "Form of Proposal", "Technical Specifications", "Contract", bond, etc., the intent and meaning shall be interpreted as follows:

Owner	Greenville Utilities Commission Greenville, North Carolina
General Manager / CEO	Anthony C. Cannon
Consulting Engineer	Booth & Associates, LLC
Observer	An authorized representative of the Owner assigned to make any or all necessary observations of work performed and equipment and/or apparatus furnished by the Bidder
Bidder	Any individual, firm, or corporation submitting a Proposal for the work contemplated, acting directly or through a duly authorized representative; or party of the second part of the Contract, acting directly or through a duly authorized representative
Subcontractor	An individual, firm, or corporation who contracts with the Bidder to perform part of the latter's Contract
Surety	The body, corporate or individual, approved by the Owner, which is bound with and for the Bidder who is primarily liable and which engages to be responsible for his acceptable performance of the work for which he has contracted
Form of Proposal, Proposal	The approved, prepared form on which the Bidder is to submit or has submitted his Proposal for the work contemplated
Bid Security	To all bids there shall be attached cash, cashier's check, or certified check from the Bidder upon a bank or trust company insured by the Federal Deposit Insurance Corporation or the Savings Associates Insurance Fund, or in lieu thereof, a Bid Bond
Plans, Drawings	All Drawings or reproductions of Drawings pertaining to the construction under the Contract
Technical Specifications	The directions, provisions, and requirements contained herein pertaining to the method and manner of performing the work or to the quantities and qualities of materials to be furnished under the Contract

Purchase Order	The agreement covering the furnishing of equipment and/or apparatus and the performance of the work. The Purchase Order shall include the "Instructions to Bidders", "General Conditions", "Form of Proposal", "Plans", "Technical Specifications", and Acknowledgments
Contract	The agreement covering the furnishing of equipment and/or apparatus and the performance of the work. The Contract shall include the "Instructions to Bidders", "General Conditions", "Form of Proposal", "Plans", "Technical Specifications", and Acknowledgments
Performance Bond (Not Required)	The approved form of security to be approved by the Owner furnished by the Bidder and his Surety as a guarantee of good faith on the part of the Bidder to accept the work in accordance with the terms of the Specifications and Contract
Payment Bond (Not Required)	The approved form of security to be approved by the Owner furnished by the Bidder and his Surety as a guarantee for payment of all Subcontractors on the part of the Bidder in acceptance of the work in accordance with the terms of the Specifications and Contract
Work	The performance of the project covered by the Specifications or the furnishing of labor, machinery, equipment, tools, or any other article or item being purchased by the Owner
Emergency	A temporary unforeseen occurrence or combination of circumstances which endangers life and property and calls for immediate action or remedy
Work at Site of Project	Work to be performed, including work normally done on the location of the project
Bid Documents	Include all sections of the Request for Bids, Form of Proposal, Technical Specifications and Appendices, Addendum/Clarifications/Bulletins, and Drawings

The subheadings in these Specifications are intended for convenience or reference only and shall not be considered as having any bearing on the interpretations thereof.

1.0 Bidder Qualification

1.1 Bids will be accepted only from Bidders deemed by the Owner or the Engineer to be qualified to provide the materials, equipment, and services described by these Specifications. The experience of Bidders in providing the same or similar materials, equipment, and services will be a major factor in determining qualification. The Bidder shall include information to establish qualifications.

1.2 Prospective Bidders who wish to submit a bid, but are not presently qualified, may receive consideration by submitting a completed Bidder's Qualification Form, which requires product line and user list, to the Engineer at least ten (10) days prior to the specified bid opening date and time. The Bidder's Qualification Form may be obtained from the Engineer.

2.0 Proposals

2.1 To warrant consideration, Proposals must comply with these instructions. Strict adherence to these specifications and drawings is requested to facilitate review and consideration of the proposal.

2.2 Bids not received on Booth & Associates, LLC *Form of Proposal* contained herein will be considered unresponsive. The forms shall be filled out complete; any omissions may cause the entire Proposal to be rejected.

2.3 Proposals must be made on the *Form of Proposal* provided herein and must not be altered, erased, or interlined in any manner. The Bidder shall fill in the *Form of Proposal* as detailed in the Terms and Conditions. The Bidder may retain one (1) copy, but the original, fully executed, must be inserted in or attached to the Bid Documents. Also, one (1) additional copy of all executed forms and supporting information shall be supplied.

2.4 The Bidder shall furnish certain information, as required by the Bid Documents regarding the equipment on which he is bidding. Two (2) copies of the information, together with the manufacturer's literature setting forth the guarantees and describing the equipment on which he is bidding shall be included as part of the Proposal. If one manufacturer is bidding through two or more agents or representatives, descriptive literature, guarantees, etc., may be submitted in duplicate in one sealed envelope, which will be considered and treated as though it contained a sealed bid. This envelope shall contain a list of the names of Bidders to whom the information applies. Each sealed Bid Proposal without this information shall state the name of the manufacturer who is furnishing the information. Additional sets of the Specifications may be obtained upon a payment of Fifty Dollars ($50) non-refundable deposit by approved Bidders.

2.5 Bids may be modified by the Bidder's removal of his original and the submittal of a completely revised bid package in full compliance with the Bid Documents if received prior to the time of opening bids and if included in the public reading of such bids. No oral or telephonic Proposals will be considered.

2.6 Proposals shall include a Form of Exceptions utilizing forms provided which shall itemize each and every exception from the Bid Documents. The Form of Exceptions shall state the section, subsection, and paragraph designations from the part of the Specifications to which exception is taken and explain in detail the nature of the exception. A copy of this Form of Exceptions is included in the *Form of Proposal*. Exceptions will not necessarily eliminate a Bidder from consideration, even if bids without exceptions are received from others. The treatment of exceptions will be based entirely on the overall best interests of the Owner.

2.7 Should the Bidder find discrepancies in the documents or fail to understand their meaning, he shall immediately notify the Engineer, who will send written instructions to all Bidders. Neither the Owner nor the Engineer will be responsible for any oral instructions.

2.8 The Bidder shall be the manufacturer of the equipment, or the Bidder shall submit with the *Form of Proposal* a notarized statement that the Bidder is authorized by the manufacturer to tender the Proposal as submitted and that the manufacturer will guarantee the suitability and

adequacy of the equipment proposed, and will be bound by the Specifications, as though the manufacturer had submitted the Proposal.

2.9 In the event that the Bidder proposes any change or deviation from the Engineer's Plans and Specifications, such Proposal changes or deviations must be submitted at the time bids are opened. The Owner reserves the right to reject any such proposed changes or deviations. All exceptions must be stated on the Form of Exceptions. Failure to submit a Form of Exceptions will imply strict adherence to the Plans and Specifications.

2.10 No Bid Proposal may be withdrawn after the scheduled closing time for the receipt of bids for a period of sixty (60) days pending the purchase order by the successful Bidder. Should the successful Bidder default and not accept a purchase order, then the purchase order may be offered to the next lowest responsible, responsive Bidder whose Proposal is evaluated as acceptable

2.11 Prior to submission of the Proposal, the Bidder shall make and shall be deemed to have made a careful examination of the Plans and Specifications on file with the Owner and with the Engineer and all other matters that may affect the cost and the time of completion of the work.

2.12 The Purchase Order, when accepted, shall be deemed to include the Specifications for the equipment, and the Bidder shall not claim any modification thereof resulting from any representative or promise made at any time by an officer, agent, or employee of the Owner or by any other person.

2.13 Firm quotations should be based upon placement of an order within sixty (60) days from bid date.

2.14 The Owner reserves the right to accept any schedule, combination of schedules, or any portion of a schedule.

3.0 Bid Security

3.1 Each Proposal shall be accompanied by a cash deposit, cashier's check, or certified check drawn on a bank or trust company insured by the Federal Deposit Insurance Corporation or Savings Association Insurance Fund, or a Bid Bond in an amount not less than five percent (5%) of the Proposal. The Owner will retain said deposit as liquidated damages in the event of failure of the Successful Bidder to execute the Purchase Order within ten (10) days after the award.

3.2 Bid Bond shall be conditioned that the Surety will, upon demand, forthwith make payment to the Obligee upon said Bond if the Bidder fails to accept a purchase order in accordance with the Bid Bond, and that upon failure to forthwith make payment, the Surety shall pay to the Obligee an amount equal to double the amount of said Bond.

3.3 Only one (1) Bid Bond is required, the amount of which shall be based on the total amount of the bid. The value for the Bid Bond shall be based on the Bid Schedule of maximum total amount.

4.0 Performance Bond/Payment Bond

A Performance Bond/Payment Bond is not required for this project.

5.0 Bulletins and Addenda

Any bulletins or addenda to the Specifications issued during the time of bidding are to be considered covered in the Proposal, and in accepting a purchase order, they will become a part thereof. Receipt of addenda shall be acknowledged by the Bidder on the *Form of Proposal*.

6.0 Delivery of Equipment

6.1 The tubular steel structures shall be shipped to the site with unloading by the Owner or Owner's Contractor. See the vicinity map located in the appendices for site location.
Deliver to Material Yard at 3280 Macgregor Downs Road, Greenville, NC 27858

6.2 Units are to be shipped utilizing an open-top truck to facilitate unloading with a crane or fork truck. Units are to be shipped direct from the manufacturing site, with no intermediate transfers. Shipping with the manufacturer's own trucks is preferred.

6.3 Method of packing and loading shall be such as to protect all parts from dampness, corrosion, breakage, or vibration injury that might reasonably be encountered in transportation, storage and handling.

6.4 A Delivery Schedule is provided as part of the Proposal on which the Bidder shall indicate the delivery schedule for his materials and equipment. Strict adherence to the quoted delivery schedule is expected. Special attention should be given to the stipulations for delivery outlined in the General Conditions. Furthermore, the Bidder shall match his scheduled deliveries to the schedule preferred by the Owner, if noted in the *Form of Proposal*.

6.5 Release for shipment is to be granted by the Owner or the Engineer based upon the manufacturer's compliance with the following:

6.5.1 Furnishing of the requisite number of copies of the Final Drawings as called for in the Specifications.

6.5.2 Coordination of manufacturing and delivery with Owner's construction schedule as may be noted in these Specifications.

6.5.3 Thirty (30) days notification of tentative shipping schedule and forty-eight (48) hours notification prior to all deliveries.

6.6 Delivery of all items of equipment shall be made at such time as to permit unloading between the hours of 9:00 a.m. and 3:00 p.m., Monday through Thursday, holidays excluded. The Owner will furnish escort to the transmission site. Ultimate delivery shall be at the discretion of the Owner.

6.7 In the event that delays occur, the Bidder shall be responsible for all shipping demurrage unless such delays are caused solely by the Owner.

6.8 Bidder will be responsible for unloading equipment upon arrival.

7.0 Contract

7.1 The award of Contract will be made to the lowest responsible, responsive Bidder as soon as practical, provided that in the selection of materials and equipment a purchase order may be awarded to a responsible Bidder other than the lowest in the interest of standardization, or ultimate economy if the advantage of such standardization or ultimate economy is clearly evident. The Owner reserves the right to reject any and all bids.

7.2 The Owner reserves the right to waive minor irregularities or minor errors in any Proposal if it appears to the Owner that such irregularities or errors were made through inadvertence. The Bidder must correct any such irregularities or errors so waived on the Proposal prior to its acceptance.

7.3 In estimating the lowest cost to the Owner as one of the factors in deciding the Award of the purchase order, the Owner will consider, in addition to the prices quoted in the Proposal, the following:

a. Equipment delivery (days),
b. Adherence to the Plans and *Technical Specifications*,
c. Evaluation of equipment suitability to the system as noted and submitted by the Bidder,
d. The Bidder's intended method of shipment of the materials and equipment, and
e. Firm prices.

8.0 Drawings and Documentation

The Bidder shall provide adequate documentation to fully describe the equipment being furnished. Each set of Approval and Final Drawings and documentation shall include, but not be limited to, the following information:

a. List of Material which shall include a complete description of all items furnished including quantity, catalog numbers, ratings, and manufacturer.
b. Structural drawings for the tubular steel structures.
c. General dimensions, plate sizes, and weights of all component parts of the structure and the anchor bolt.
d. The total ultimate moments, section modulus required and section modulus furnished at all splices and a minimum of every twenty feet along the pole shaft.
e. Deflections, including magnitude and direction, at the top of each structure due to loading conditions specified. Provide a pre-camber and/or rake table summary if applicable.
f. For a frame structure, a sketch showing joint coordinates and load application points.
g. Any revisions to the initial design calculations.
h. The total ultimate moments, section modulus required and furnished at the base of the arms.
i. Computation of stresses in base plates, connections, attachments, and anchor bolts.
j. Bend line base plate calculations including a detailed sketch of the bend lines in relationship to the pole base, baseplate, and anchor bolts.

All Drawings shall have marked on each sheet the label:

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GREENVILLE, NORTH CAROLINA
TUBULAR STEEL STRUCTURES FOR THE
DICKINSON AVENUE TO FROG LEVEL ROAD 115 kV TRANSMISSION LINE
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Dimensional information shown on all Drawings shall be stated in feet and inches.

All Drawings and documentation shall be submitted directly to the Owner's Engineer, Booth & Associates, LLC, 5811 Glenwood Avenue, Suite 109, Raleigh, North Carolina 27612; Attention: Mr. Alex R. deVries.

8.1 Drawings Furnished with Specifications

Booth & Associates, LLC Tubular Steel Structure Design Drawings have been prepared for The Owner's transmission line. These Drawings are located in the Appendices.

8.2 Drawings Furnished by Manufacturer

8.2.1 Approval Drawings

Before proceeding with fabrication, the manufacturer shall submit for review and approval to the Engineer sufficient Drawings to demonstrate that all parts conform to the requirements and intent of these Specifications. Each set of Drawings shall include those Drawings as outlined in Section 5.0.

For drawing approval, the manufacturer shall submit four (4) sets each of the Drawings.

Approval of Drawings shall not be held to relieve the manufacturer of obligations to meet all requirements in the Specifications, of responsibility for correctness of the

Drawings, or of responsibility to meet original shipping promise on the basis of the Owner being allowed three (3) weeks for approval.

Receipt of Approval Drawings by the manufacturer constitutes authorization for manufacture only, based upon the corrections found thereon.

The Owner's Engineer may require a second submittal of Shop Drawings if, in the opinion of the Engineer, such is required due to the extent of changes required on the first submittal. If an extension of time is required due to a protracted drawing approval process, the price will remain as quoted for the quoted delivery.

8.2.2 Final Drawings

Contingent upon Approval Drawing review and product manufacture, the Bidder shall issue final documentation as follows:

a. One (1) complete set of all Drawings, revised to "as-built" status.
b. One (1) complete set of all Drawings, revised to "as-built" status, released on two (2) separate CD-ROMs, compatible with AutoCAD 2010.
c. All Drawings are to be certified correct and supplied within a reasonable length of time prior to shipment of the equipment.

9.0 Manufacturer's Field Representative

The manufacturer shall include as a separate line item in the Bid Schedule the cost of services of a Field Service Engineer for a period of one (1) working day per unit. The manufacturer is responsible for all travel time and expenses. The duties of the Field Service Engineer shall include supervising installation of component parts removed for shipment, and to perform certain field tests, outlined in the *Technical Specifications*. All associated cost for field service shall be included in the base bid. If the bidder fails to include all costs, an amount of $5,000 per unit will be used for evaluation purposes.

10.0 Payment

10.1 Invoices shall be submitted in triplicate to the Engineer for review and approval. The address for submittal of all invoices is: Booth & Associates, LLC, 5811 Glenwood Avenue, Suite 109, Raleigh, North Carolina 27612; Attention: Mr. Alex R. deVries.

10.2 Payment by the Owner of ninety (90) percent of the purchase price shall be made to the Successful Bidder in a lump sum after delivery.

10.3 There shall be a ten-percent (10%) retainage on invoices until all equipment, with proper instruction books per Specifications, and certified test reports have been approved and accepted by the Owner and the Engineer. The Owner reserves the right to hold this retainage for a period of up to ninety (90) days without penalty to verify completeness of delivery. A ten-percent (10%) Performance Bond may be provided in lieu of retainage provisions. Deviation from the foregoing payment provisions will be considered less than responsive.

GENERAL CONDITIONS

1.0 Drawings and Specifications

The Drawings and Specifications are complementary, one to the other. That which is shown on the Drawings or called for in the Specifications shall be as binding as if it were both called for and shown. The intention of the Drawings and Specifications is to include all labor, materials, transportation, equipment, and any and all other things necessary to do a complete job, which may include manufactured items and field service assistance. In case of discrepancy or disagreement in the Purchase Order, the order of precedence shall be: Purchase Order, Specifications, Drawings.

2.0 Clarifications and Detail Drawings

In such cases where the nature of the work requires clarification by the Engineer, such clarification shall be furnished by the Engineer with reasonable promptness by means of written instructions or Detail Drawings or both. Clarifications and Drawings shall be consistent with the intent of Bidding Documents, and shall become a part thereof.

3.0 Copies of Drawings and Specifications

The Engineer will furnish free of charge to the Bidder one (1) copy of the Drawings and Specifications. Additional sets of these Specifications may be obtained upon request and a non-refundable deposit of Fifty Dollars ($50.00) by approved Bidders.

4.0 Ownership of Drawings and Specifications

All Drawings and Specifications are instruments of service and remain the property of the Engineer whose name appears thereon. The use of these instruments on work other than these Bid Documents without permission is prohibited. All copies of Drawings and Specifications other than final copies shall be returned to the Engineer upon request after completion of the work.

5.0 Royalties, Licenses, and Patents

It is the intention of the Bidding Documents that the work covered herein will not constitute in any way an infringement on patents. The Bidder shall protect and save harmless the Owner against suit on account of alleged or actual infringement. The Bidder shall pay all royalties and/or license fees required on account of patented articles or processes, whether or not the patent rights are evidenced hereinafter.

6.0 Uncorrected Faulty Work

The Bidder shall be notified of faulty or damaged work and shall have the option to respond in a reasonable period of time. Should the correction of faulty or damaged work be considered inadvisable or inexpedient by the Owner or the Engineer, the Owner shall be reimbursed by the Bidder for the same by a deduction in the Purchase Order prices arrived at by a fair estimate of the probable cost of correction, approved by the Engineer.

7.0 Liquidated Damages

The Bidder shall commence manufacturing upon issuance of a Purchase Order from the Owner, and shall fully complete delivery as per the Delivery Schedule in the *Form of Proposal*. For each day in excess of the proposed dates, the Bidder shall make payable to the Owner the sum of five hundred dollars ($500.00) as liquidated damages (and not as a penalty), reasonably estimated in advance to cover the losses to be incurred by the Owner by reason of failure of said Bidder to complete delivery

within the time specified, such time being in the essence of this Purchase Order and material consideration thereof.

8.0 Delays and Extension of Time

8.1 The time to be allowed for delivery is stated in the *Form of Proposal*. The Bidder, upon notice of award of the Purchase Order, shall prepare a delivery schedule based on the allowed time and submit such schedule to the Engineer for approval.

8.2 If Bidder is delayed at any time in the progress of the work by any act of negligence by the Owner or the Engineer, by any separate Bidder employed by the Owner, or by changes ordered in the work, then the time of completion shall be extended for such reasonable time as the Engineer may decide.

8.3 No extension of time for completion will be made for ordinary delays and accidents. Extensions may be granted for delays ordered by the Engineer if the request has been made in writing within forty-eight (48) hours after the order to cease work has been given.

9.0 Assignments

The Bidder shall not assign any portion of this Purchase Order nor subcontract in its entirety except as fully explained in the *Form of Proposal* and accepted by the Owner. No funds or sums of money due or to become due to the Bidder under this Purchase Order may be assigned.

10.0 Guarantee

The Bidder shall guarantee his materials and workmanship against defect due to faulty materials, faulty workmanship, or negligence for a period of one (1) full year from date of energization and/or eighteen (18) months from date of delivery, whichever applies. He shall make good such defective materials or workmanship and any damages resulting therefrom without cost to the Owner. Each class of equipment shall carry a full one (1) year warranty against defects from the date of energization.

11.0 Change In Drawings and/or Specifications

The Owner, or the Engineer on behalf of the Owner, may make changes to Drawings and/or Specifications after award of the Purchase Order or while fabrication is in progress. The compensation for such changes shall be agreed upon in writing between the Bidder and the Owner prior to commencement of work involving the change. No payment shall be made to the Bidder for correcting work not in compliance with Specifications.

12.0 Insurance

During the term of the Contract, the Bidder at its sole cost and expense shall provide commercial insurance of such type and with such terms and limits as may be reasonably associated with the Contract. As a minimum, the Bidder shall provide and maintain the following coverage and limits:

12.1 Worker's Compensation - The Bidder shall provide and maintain Worker's Compensation Insurance, as required by the laws of North Carolina, as well as employer's liability coverage with minimum limits of $1,000,000.00, covering all of Bidder's employees who are engaged in any work under the Contract. If any work is sublet, the Bidder shall require the subcontractor to provide the same coverage for any of his employees engaged in any work under the Contract.

12.2 Commercial General Liability - General Liability Coverage on a Comprehensive Broad Form on an occurrence basis in the minimum amount of $1,000,000.00 Combined Single Limit. (Defense cost shall be in excess of the limit of the liability.)

12.3 Automobile - Automobile Liability Insurance, to include liability coverage, covering all owned, hired, and non-owned vehicles, used in connection with the Contract. The minimum combined single limit shall be $150,000.00 uninsured/under insured motorist; and $1,000.00 medical payment.

- Public Liability Insurance for bodily injury or death $1,000,000 for one person, and $2,000,000 for each accident.
- Property Damage Insurance $2,000,000 for each accident and $2,000,000 aggregate for accidents during the policy period.

12.4 Motor Vehicle Liability Insurance shall be for not less than the following amounts:

- Bodily injury or death $1,000,000 for one person and $2,000,000 for each accident.
- Property damage is $2,000,000 for each accident.

12.5 Copies of Certificates of Insurance for all aforementioned policies shall be furnished by the Bidder and shall be attached to the respective pages of the Contract Agreement at the time of signing.

12.6 It shall be understood that the above-required insurance shall not be canceled or changed until thirty (30) days after written notice of such termination or alteration has been sent by registered mail to GUC Procurement Coordinator.

CLEVE HADDOCK, CLGPO.
PROCUREMENT COORDINATOR**:**
Greenville Utilities Commission.
401 South Greene Street
Greenville, North Carolina 27834

12.7 Each certificate must not terminate before the contract completion date.

Requirements - Providing and maintaining adequate insurance coverage is a material obligation of the Bidder and is of the essence of this Contract. All such insurance shall meet all laws of the State of North Carolina. Such insurance coverage shall be obtained from companies that are authorized to provide such coverage and that are authorized by the Commissioner of Insurance to do business in North Carolina. The Bidder shall at all times comply with terms of such insurance policies, and all requirements of the insurer under any such insurance policies, except as they may conflict with existing North Carolina laws or this Contract. The limits of coverage under each insurance policy maintained by the Bidder shall not be interpreted as limiting the Bidder's liability and obligations under the Contract.

13.0 Inspection at Bidder's Site

The Owner reserves the right to inspect, at a reasonable time, the equipment/item, plant or other facilities of a prospective Bidder prior to Contract award, and during the Contract term as necessary for the Owner's determination that such equipment/item, plant or other facilities conform with the specifications/requirements and are adequate and suitable for the proper and effective performance of the Contract.

14.0 Advertising

Bidder agrees not to use the existence of this Contract or the name of the Owner as part of any commercial advertisement.

15.0 Access to Persons and Records

An independent auditor shall have access to persons and records as a result of all Contracts or grants entered into by the Owner in accordance with General Statue 147-64.7 insofar as they relate to transactions with the Owner.

16.0 Equal Employment Opportunity, Minority Business Participation Program

During the performance of this work, the Bidder agrees as follows:

16.1 The Bidder will not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, political affiliation or belief, age, or physical handicap. The Bidder will take affirmative action to insure that applicants are employed and that employees are treated during employment without regard to race, color, religion, sex, national origin, political affiliation or belief, age, or physical handicap. Such action shall include but not be limited to the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation and selection for training, including apprenticeship. The Bidder agrees to post in conspicuous places available to employees and applicants for employment notices setting forth the nondiscrimination clause.

16.2 The Bidder, in all solicitations or advertisements for employees placed by or on behalf of the Bidder, will state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, political affiliation or belief, age, or physical handicap.

16.3 The Bidder will send to each labor union or representative of workers with which he has a collective bargaining agreement or other Purchase Order or understanding, a notice advising the labor union or workers' representative of the Bidder's commitments under the Equal Employment Opportunity Section of this Specification and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

16.4 In the event of the Bidder's noncompliance with the nondiscrimination clauses of this Specification or with any of such rules, regulations, or orders, the Purchase Order may be canceled, terminated, or suspended in whole or in part and the Bidder may be declared ineligible for further Owner contracts.

16.5 The Bidder will include the provisions of this section in every Subcontract or Purchase Order unless exempted by rules, regulations, or orders of the Owner, so that such provisions will be binding upon each Subcontractor.

16.6 The Owner has adopted an Affirmative Action and Minority and Women Business Enterprise Plan (M/WBE) Program. Firms submitting a proposal are attesting that they also have taken affirmative action to ensure equality of opportunity in all aspects of employment, and to utilize M/WBE suppliers of materials and/or labor.

17.0 Indemnification

Bidder agrees to indemnity and save GUC of the City of Greenville, Pitt County, North Carolina, and the City of Greenville, North Carolina, its co-owners, joint-venturers, agents, employees, and insurance carriers harmless from any and all Third Party claims, actions, costs, expenses, including reasonable attorney fees, judgments, or other damages resulting from injury to any person (including injury resulting in death), or damage (including loss or destruction) to third party tangible property arising out of the negligent performance of the terms of this Contract by Bidder; including, but not limited to, Bidder's employees, agents, subcontractors, and others designated by Bidder to perform work or services in, about, or attendant to, the work and services under the terms of this Contract. Bidder shall not be held responsible for any losses, expenses, claims, subrogation, actions, costs, judgments, or other damages, directly and proximately caused by the negligence of Greenville Utilities Commission of the City of Greenville, Pitt County, North Carolina. Insurance covering this indemnity agreement by Bidder in favor of Greenville Utilities Commission of the City of Greenville, Pitt County, North Carolina, and the City of Greenville, North Carolina, shall be provided by the Bidder.

18.0 Mediation/Binding Arbitration

In the event of any dispute between the Parties, the Parties agree to submit any dispute to non-binding mediation before a mutually agreeable Mediator prior to initiating litigation. If the Parties are unable to agree upon a Mediator within thirty (30) days after demand therefore, either Party may petition a Court of competent jurisdiction for the designation of a qualified Mediator for these purposes. Each Party shall bear its own costs and expenses of participating in the mediation (including, without limitation, reasonable attorneys' fees), and each Party shall bear one-half (1/2) of the costs and expenses of the Mediator. Unless otherwise agreed, the Parties will hold the mediation in Greenville, North Carolina. The matters discussed or revealed in the mediation session shall not be disclosed in any subsequent litigation.

In the event the matter is not resolved in mediation, either Party may request arbitration. The parties shall jointly select an Arbitrator, and shall be bound by the decision of the Arbitrator with respect to any dispute between the parties with respect to this Agreement. If the parties are unable to mutually agree upon an Arbitrator, the Parties shall each select an Arbitrator, and the two Arbitrators so selected shall select a third Arbitrator, and the decision of the majority of the Arbitrators shall be conclusive and binding upon the Parties. The Parties at all times agree to equally split the costs of any Arbitrator(s) selected in an effort to resolve the dispute between the Parties. Any party desiring to resolve a dispute under the terms of this Agreement shall notify the other Party in writing, and the Parties shall seek to agree upon a mutually agreed-upon Arbitrator within a period of ten (10) days from the date of such written demand. If the Parties are unable to agree within such ten (10) day period, the Parties shall each select an Arbitrator, and the two (2) Arbitrators so selected shall select a third Arbitrator within fifteen (15) days from the date of the written demand for arbitration, and a decision shall be rendered by the Arbitrator(s) so selected within five (5) days after such Arbitrator(s) is selected.

19.0 Government Restrictions

In the event any Governmental restrictions may be imposed which would necessitate alteration of the material, quality, workmanship, or performance of the items offered on this bid prior to their delivery, it shall be the responsibility of the successful Bidder to notify the GUC Procurement Coordinator, at once, indicating in its letter the specific regulation which required such alterations. GUC reserves the right to accept any such alterations, including any price adjustments occasioned thereby, or, in the sole discretion of GUC, to cancel the contract.

20.0 Patents And Copyrights

The Bidder shall hold and save GUC, its officers, agents, and employees, harmless from liability of any kind, including costs and expenses, including reasonable attorney fees, on account of any copyrighted articles or any patented or unpatented invention, device or appliance manufactured or used in the performance of this contract.

21.0 Patent And Copyright Indemnity

The Bidder will defend or settle, at its own expense, any action brought against GUC to the extent that it is based on a claim that the product(s) provided pursuant to this agreement infringe any U.S. copyright or patent; and will pay those costs, damages, and attorney fees finally awarded against GUC in any such action attributable to any such claim, but such defense, settlements, and payments are conditioned on the following: (1) that Bidder shall be notified promptly in writing by GUC of any such claim; (2) that Bidder shall have sole control of the defense of any action on such claim and of all negotiations for its settlement or compromise; (3) that GUC shall cooperate with Bidder in a reasonable way to facilitate the settlement of defense of such claim; (4) that such claim does not arise from GUC modifications not authorized by the Bidder or from the use of combination of products

provided by the Bidder with products provided by GUC or by others; and (5) should such product(s) become, or in the Bidder's opinion likely to become, the subject of such claim of infringement, then GUC shall permit Bidder, at Bidder's option and expense, either to procure for GUC the right to continue using the product(s), or replace or modify the same so that it becomes non-infringing and performs in a substantially similar manner to the original product.

22.0 Exceptions

All proposals are subject to the terms and conditions outlined herein. All responses will be controlled by such terms and conditions and the submission of other terms and conditions, price catalogs, and other documents as part of a Bidder's response will be waived and have no effect on this Request for Proposal or any other contract that may be awarded resulting from this solicitation. The submission of any other terms and conditions by a Bidder may be grounds for rejection of the Bidder's proposal. The Bidder specifically agrees to the terms and conditions set forth in this set of Terms and Conditions by affixing its name on the signatory page contained herein.

23.0 Confidential Information

GUC will keep trade secrets which the Bidder does not wish to be disclosed, except as provided by statute and rule of law. Each page shall be identified in boldface at the top and bottom as "CONFIDENTIAL" by the Bidder. Cost information shall not be deemed confidential. The determination of whether a matter is confidential will be determined by North Carolina law.

24.0 Assignment

No assignment of the Bidder's obligations or the Bidder's right to receive payment hereunder shall be permitted without the express written consent of GUC, provided however, upon written request approved by the GUC Procurement Coordinator, solely as a convenience to the Bidder, GUC may:

- Forward the Bidder's payment check directly to any person or entity designated by the Bidder, and
- Include any person or entity designated by Bidder as a joint payee on the Bidder's payment check.
- In no event shall such approval and action obligate GUC to anyone other than the Bidder, and the Bidder shall remain responsible for fulfillment of all contract obligations.

25.0 Availability Of Funds

Any and all payments of compensation of this specific transaction and any continuation or any renewal or extension are dependent upon and subject to the allocation of GUC funds for the purpose set forth in this Agreement.

26.0 Governing Laws

All contracts, transactions, agreements, etc., are made under and shall be governed by and construed in accordance with the laws of the State of North Carolina.

27.0 Administrative Code

Bids, proposals, and awards are subject to applicable provisions of the North Carolina Administrative Code.

28.0 Execution

In the discretion of GUC, failure of a duly authorized official of Bidder to sign the Signatory Page may render the bid invalid.

29.0 Clarifications/Interpretations

Any and all questions regarding these Terms and Conditions must be addressed to the GUC Procurement Coordinator. Do not contact the user directly. **These Terms and Conditions are a complete statement of the parties' agreement and may only be modified in writing signed by Bidder and the GUC Procurement Coordinator.**

30.0 Situs

The place of all contracts, transactions, agreements, their situs and forum, shall be North Carolina, where all matters, whether in contract or tort, relating to the validity, construction, interpretation, and enforcement shall be determined.

31.0 Termination of Agreement

GUC or Bidder may terminate this Agreement for just cause at any time. Bidder will be paid for all time and expenses incurred as of the termination date. Termination for just cause by either party shall be by certified letter and shall be effective thirty (30) days after signed and acknowledged receipt of said letter. Just cause shall be based on reasonable grounds, and there must be a fair and honest cause or reason for such action. The causes for termination, include, but are not limited to: (1) Bidder's persistent failure to perform in accordance with the Terms and Conditions, (2) Bidder's disregard of laws and regulations related to this transaction, and/or (3) Bidder's substantial violation of the provisions of the Terms and Conditions

32.0 Force Majeure

Neither party shall be considered in default in the performance of its obligations hereunder to the extent that the performance of any such obligation is prevented or delayed by any cause, existing or future, which is beyond the reasonable control of such party. In any such event of force majeure, the parties shall advise each other of such event, and the parties shall negotiate an equitable adjustment to their respective obligations under this Agreement.

33.0 Integrated Contract

These Terms and Conditions, Instructions to Bidders, Specifications, and the selected Bidder's bid represents the entire contract between the Parties. No verbal or other written agreement(s) shall be held to vary the provisions of this Agreement.

34.0 Contract Provisions

Each of the provisions of these Terms and Conditions shall apply to the full extent permitted by law, and the invalidity in whole or in part of any provision shall not affect the remainder of such provision or any other provisions.

35.0 E-Verify

E-Verify - I understand that E-Verify is the federal E-Verify program operated by the United States Department of Homeland Security and other federal agencies, or any successor or equivalent program

used to verify the work authorization of newly hired employees pursuant to federal law in accordance with NCGS §64-25 et seq. I am aware of and in compliance with the requirements of E-Verify and Article 2 of Chapter 64 of the North Carolina General Statutes. To the best of my knowledge, any subcontractors employed by me as a part of this contract are in compliance with the requirements of E-Verify and Article 2 of Chapter 64 of the North Carolina General Statutes.

36.0 Iran Divestment Act Certification

By acceptance of this purchase order, Vendor/Contractor certifies that, as of the date of the purchase order or contract, it is not on the Final Divestment List as created by the State Treasurer pursuant to N.C.G.S. § 143-6A-4. In compliance with the requirements of the Iran Divestment Act and N.C.G.S. § 143C-6A-5(b), Vendor/Contractor shall not utilize in the performance of the contract any subcontractor that is identified on the Final Divestment List

37.0 Notices

Notices to the Parties should be sent to the names and addresses specified below:

Mr. Cleve Haddock, CLGPO.
Purchasing, Procurement Coordinator
Greenville Utilities Commission
401 South Greene Street
Greenville, NC 27834

CONTRACT AGREEMENT

THIS CONTRACT, made this_____day,_____ 2017, by _____, hereinafter called Bidder, and GREENVILLE UTILITIES COMMISSION (GUC) OF THE CITY OF GREENVILLE, PITT COUNTY, NORTH CAROLINA, a corporation, hereinafter called the Owner.

WITNESSETH

THAT WHEREAS, a Contract for

TUBULAR STEEL STRUCTURES FOR THE
DICKINSON AVENUE TO FROG LEVEL ROAD 115 kV TRANSMISSION LINE
R-2250 NCDOT RELOCATION

has recently been awarded to Bidder by the Owner at and for a total price of _____($_____) named in the Bidder's Proposal attached hereto;

AND WHEREAS, it was provided in said award that a formal Contract would be executed by and between Bidder and Owner, evidencing the terms of said award, and that Bidder would commence the work to be performed under this agreement on a date to be specified in a written order of Owner, and would fully complete all work thereunder no later than_____days from the date of contract.

NOW, THEREFORE, Bidder doth hereby covenant and agree with Owner that it will well and faithfully perform and execute such work and furnish such work and furnish such materials and equipment in accordance with each and every one of the conditions, covenants, stipulations, terms, and provisions contained in said Specifications in accordance with the Plans, at the total price named therefore in the Bidder's Proposal attached hereto, and will well and faithfully comply with and perform each and every obligation imposed upon it by said Plans and Specifications and the terms of said award.

Bidder shall promptly make payments to all laborers and others employed thereon.

Bidder shall be responsible for all damages to the property of the Owner that may be consequent upon the normal procedure of its work or that may be caused by or result from the negligence of Bidder, its employees, or agents during the progress of or connected with the prosecution of the work, whether within the limits of the work or elsewhere. Bidder must restore all property so injured to a condition as good as it was when Bidder entered upon the work.

By execution of this Contract, both parties acknowledge the following conditions as a part of their respective obligations:

a) Governing Law - This Contract shall be construed and enforced in accordance with the laws of the State of North Carolina. All parties agree to the jurisdiction of the Courts of North Carolina with respect to any action or dispute arising between the parties.

b) Further Assurances - The parties hereto agree to execute and deliver any and all papers and documents which may be necessary to carry out the terms of this Contract.

c) Entire Contract - This Contract (including materials incorporated herein by reference) constitutes the entire agreement between the parties hereto and there are no agreements, representations, or warranties which are not set forth herein. All prior negotiations, agreements, and understandings are superseded hereby. This Contract may not be amended or revised except by a writing signed by all parties hereto. This Contract shall be construed and interpreted without any presumption either for or against the party who caused its preparation.

d) Binding Effect - This Contract shall be binding upon an inure to the benefit of the heirs, legal representatives, successors and assigns of the respective parties hereto, provided that this Contract and all rights hereunder may not be assigned by any party hereto without the written consent of the other party.

e) Time of Performance - Time is of the essence with regard to the performance of this Contract.

f) Survivability - The terms of this Contract shall survive execution and delivery of any deeds or bills of sale called for hereunder.

g) Headings - The headings in the paragraphs of this Contract are inserted for convenience only and do not constitute a part hereof.

Bidder shall furthermore be responsible for and required to make good at its expense any and all damages of whatever nature to persons or property arising during the period of the Contract caused by carelessness, neglect, or want of due precaution on the part of Bidder, its agents, employees, or workmen. Bidder shall also indemnify and save harmless the Owner, and the officers and agents thereof, from all third party claims, suits, and proceedings of every name and description which may be brought against the Owner, or the officers and agents thereof, for or on account of any injuries or damages to persons or property received or sustained by any person or persons, firm, or corporation, by or in consequence of any materials used in said work, to the extent caused by the negligence of Bidder, its agents, employees, servants, or workmen.

It is agreed and understood that the Notice to Prospective Bidders, Definitions, Instructions to Bidders, and Technical Specifications, the accepted Bidder's Proposal, and the enumerated addenda are incorporated in this Contract by reference and are an integral part thereof as set forth herein.

And the Owner doth hereby covenant and agree with Bidder that it will pay to Bidder, when due and payable under the terms of said Specifications and said award, the above-mentioned sum; and that it will well and faithfully comply with and perform each and every obligation imposed upon it by said Specifications and the terms of said award.

Bidder shall, upon completion of all work awarded under this Contract, furnish to the Owner invoices or copies of invoices for all materials purchased for said work; and such invoices shall state the amount of North Carolina sales tax paid for said materials. Bidder shall also furnish the Owner an affidavit certifying the total costs of materials purchased for all work performed under the Contract and the total amount of state sales tax paid for said materials.

Whenever used herein, the singular shall include the plural, the plural the singular, and the use of any genders shall be applicable to all genders as the context may require.

PROVIDE CURRENT LIABILITY INSURANCE CERTIFICATE(S)
General Conditions, 12.0 Insurance

COVERAGES:

1. Workmen's Compensation Insurance shall include all of the Bidder's employees employed at the site of the project under his Contract. In case any class of employees engaged in hazardous work under this Contract at the site of the project is not protected under the Workmen's Compensation Statute, the Bidder shall provide adequate coverage for the protection of his employees not otherwise protected.

2. Public Liability and Property Damage Insurance shall be in such amounts as to adequately protect the Owner and the Bidder from claims for damages for personal injury, including accidental death, as well as from claims for property damages which may arise from operations under this Contract, whether such operations be by himself or by anyone directly or indirectly employed by him. The amount of such insurance shall be for the following:

   Public Liability Insurance for bodily injury or death $1,000,000 for one person, and $2,000,000 for each accident.

   Property Damage Insurance $2,000,000 for each accident and $2,000,000 aggregate for accidents during the policy period.

3. Motor Vehicle Liability Insurance shall be for the following amounts:

   Bodily injury or death $1,000,000 for one person and $2,000,000 for each accident.

   Property damage is $2,000,000 for each accident.

Copies of Certificates of Insurance for all aforementioned policies shall be furnished by the Bidder and shall be attached to the respective pages of the Contract Agreement at the time of signing.

It shall be understood that the above-required insurance shall not be canceled or changed until thirty (30) days after written notice of such termination or alteration has been sent by registered mail to the certificate holder.

CERTIFICATE HOLDER:

Greenville Utilities Commission
401 South Greene Street
Greenville, NC 27834 Contact: Mr. Cleve Haddock, CLGPO.
Phone: 252-551-1533

EXPIRATION:

Each certificate must not terminate before the contract completion date.

IN TESTIMONY WHEREOF, Bidder and Owner have duly signed and sealed this Contract.

BIDDER:

(Imprint Corporate Seal Below this line) _____(SEAL)

By _____(SEAL)

Title President

ATTEST:

By:

Title: Secretary

GREENVILLE UTILITIES COMMISSION (GUC) OF THE CITY OF GREENVILLE, PITT COUNTY, NORTH CAROLINA

By _____
Anthony C. Cannon

Title: General Manager / CEO

ATTEST:

By: _____
Amy Carson Quinn

Title: Executive Secretary

APPROVED AS TO FORM AND LEGALITY:

By: _____
Phillip R. Dixon

Title: General Counsel

INSTRUCTIONS FOR PROPER SIGNING

If Bidder is an individual, sign on first line only and designate trade name below first line, thus:

John Jones (SEAL)
Trading as Jones Paving Company

If Bidder is a partnership, sign partnership name on first line; have at least one general (not limited) partner sign on second line, and put his designation as partner on third line, thus:

JONES PAVING COMPANY (SEAL)

By John Jones (SEAL)

Title General Partner

If Bidder is a corporation, sign corporate name on first line (exactly) as such appears on the corporate seal, have the President or a Vice President sign on second line, put his title on third line, have the Secretary or Assistant Secretary sign on the left "Attest" line (adding the word "Assistant" before the word "Secretary" if the Assistant Secretary is signing), and imprint corporate seal above the word "Attest", thus:

JONES PAVING COMPANY, INC (SEAL)

By John Jones (SEAL)

Title President

ATTEST:

Thomas Jones
Assistant Secretary

CERTIFICATE OF ATTORNEY

GREENVILLE UTILITIES COMMISSION (GUC)
OF THE CITY OF GREENVILLE,
PITT COUNTY, NORTH CAROLINA

This is to certify I have examined the attached Contract Documents, and after such examination I am of the opinion that such Documents conform to the laws of the State of North Carolina, the execution of the Contract is in due and proper form, the representatives of the respective contracting parties have full power and authority to execute such Contract on behalf of the respective contracting parties, and the foregoing agreements constitute valid and binding obligations on such parties.

By: _____
Phillip R. Dixon

Title: General Counsel

Date: _____

This instrument has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act.

By: _____
Jeff W. McCauley

Title: Chief Financial Officer

Date: _____

GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

TUBULAR STEEL STRUCTURES FOR THE
DICKINSON AVENUE TO FROG LEVEL ROAD 115 kV TRANSMISSION LINE
R-2250 NCDOT RELOCATION

FORM OF PROPOSAL

(*Provide* ***one*** *original and* ***one*** *copy****)***

Respectfully submitted this ____ day of _____, 2017

OWNER:	**BIDDER:**
Greenville Utilities Commission 401 South Greene Street Greenville, North Carolina 27834 P.O. Box 1847 Greenville, North Carolina 27835 Mr. Cleve Haddock, CLGPO. Procurement Coordinator Office: 252-551-1533	
	NAME TITLE
	STREET ADDRESS
	CITY/STATE/ZIP
	PHONE:
	FAX:
	E-MAIL:
	SIGNATURE
SUPPLIER OF PROPOSED EQUIPMENT	
MANUFACTURER	
STREET ADDRESS	
CITY/STATE/ZIP	

TERMS AND CONDITIONS

1. The undersigned (hereinafter called the "Bidder") hereby proposes to sell and deliver to the Owner upon the terms and conditions herein stated, the materials, equipment, and services (hereinafter called the "Material") specified in the Bid Schedule(s) attached hereto, and by this reference made a part hereof, for the Materials for the Owner, and:

    a. These bid documents that include *Notice to Prospective Bidders*, *Instructions to Bidders*, *General Conditions*, and *Technical Specifications* for the prefabricated metal relay control house.
    b. Manufacturer's specifications, both as set forth herein and in Manufacturer's literature (two [2] sets) attached hereto, or furnished separately as provided for in the *Instructions to Bidders*;
    c. Legal negotiations, with low bidder only, after bids are opened, for budgetary compliance.

2. The prices as quoted herein:

    a. Are firm unless otherwise stated,
    b. Are FOB to the location(s), as outlined in the *Instructions to Bidders*,
    c. Do include the cost of delivery to the site at the Bidder's Risk, assuming unloading by Others, and
    d. Have state sales tax shown as a separate item, if applicable.

3. Invoice shall list the appropriate state sales tax as a separate item.

4. The Bidder further declares that he has examined the site of the work and informed himself fully regarding all conditions pertaining to the location where the Material is to be delivered; that he has examined the *Technical Specifications* for the work and Bid Documents relative thereto; has read all special provisions furnished prior to the opening of the bids; and that he has satisfied himself relative to the work to be performed.

5. The Bidder proposes and agrees if the following Bid Schedule(s) in this Proposal is accepted, to contract with the Owner, in the form of a purchase order specified, to furnish all necessary equipment and materials, except materials and equipment specified to be furnished by the Owner, complete in accordance with the Bid Documents, to the full and entire satisfaction of the Owner, with a definite understanding that no money will be allowed for extra work except as set forth in the *General Conditions*, and as filed on Change Order Forms.

6. The materials will conform to the *Technical Specifications* attached hereto and made a part hereof.

7. The Material prices set forth herein do not include any sums which are or may be payable by the Bidder on account of State Sales Tax upon the sale, purchase or use of the material. If any such tax is applicable to the sale, purchase or use of the material hereunder, the amount thereof shall be added to the purchase price and paid by the Owner after the Bidder has ascertained the actual sales tax to be included in the purchase order price.

8. The Owner reserves the right to accept any schedule, combination of schedules, or any portion of a schedule.

9. A *Form of Exceptions* to the *Technical Specifications*, prepared in accordance with the *Instructions to Bidders*, is attached hereto. The Bidder shall document any exceptions with deviation from the bid documents and specifications in the *Form of Proposal*. Otherwise, the complete compliance is assumed.

10. Proposals shall include a complete bill of materials, identifying each item by catalog number, manufacturer, ratings, characteristics, types, sizes, etc., of all materials and equipment required for a complete and coordinated substation. A simple statement that all necessary materials and equipment will be provided is not acceptable.

11. Title to the materials shall pass to the Owner upon delivery to the location(s) specified in the *Instructions to Bidders*.

12. The Bidder warrants that the Materials will conform to the performance data and guarantees which are attached hereto and by this reference made a part thereof.

13. The Bidder warrants the accuracy of all statements contained in the Bidders Qualifications, if any shall be submitted, and agrees that the Owner shall rely upon such accuracy as a condition of the Purchase Order in the event that this Proposal is accepted.

14. By the submission of this bid, the Bidder certifies that:

a. The bid has been arrived at by the Bidder independently and has been submitted without collusion with any other Bidder of materials, supplies, or equipment of the type described in the *Notice to Prospective Bidders* or the *Technical* Specifications, and

b. The contents of the bid have not been communicated by the Bidder, nor, to its best knowledge and belief, by any of its employees or agents, to any person not an employee or agent of the Bidder or its Surety on any Bond furnished herewith, and will not be communicated to any person prior to the official opening of the bid.

15. The Bidder further agrees that in case of failure on his part to accept said purchase order within ten (10) consecutive calendar days after written notice has been given of the award of the Purchase Order, the Bid Security accompanying this bid, and the monies payable thereon, shall be paid into the funds of the Owner account set aside for this project, as liquidated damages for such failure; otherwise the check or cash accompanying the *Form of Proposal* shall be returned to the Bidder.

16. If, in submitting this Proposal, the Bidder has made any change in the *Form of Proposal*, the Bidder understands that the Owner may evaluate the effect of such change as they see fit or they may exclude the Proposal from consideration in determining the issue of Purchase Order.

BID SCHEDULES

BID SCHEDULE NO. 1 – Base Bid – Tubular Steel Structures

DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL PRICE
Design and furnish Tubular Steel Structures for the Dickinson Avenue to Frog Level Road 115 kV Transmission Line, R-2250 NCDOT Relocation, all as per Specifications, including delivery to the site.		$	$

BASE BID ONLY: $ _____

State Sales Tax (If Applicable) $ _____

BID SCHEDULE NO. – Delivery Schedule

The prices of each pole and/or vibratory caisson set forth herein shall include the cost of delivery to each site at the Bidder's risk. The schedule of delivery shall be as follows:

Poles and Vibratory Caissons shall be delivered no later than Thursday, November 30th, 2017

Item	Delivery Schedule (Days) *
Submittal of Approval Drawings	
Submittal of Final Drawings**	
Delivery of Materials[1] **	

* After the receipt of the written order of the Owner in consecutive calendar days

** Allow two (2) weeks for Engineer's review and turnaround for all Drawing submittals. *The Owner requests deliveries be scheduled to the site in an organized and timely manner. Deliveries shall be steady, with no more than five (5) business days between trucks, and not-to-exceed four (4) weeks duration from start to finish.*

BID SCHEDULE NO. 1 – Field Service Engineering (Per day rate for additional days)

Per Day Rate (including expenses) for field service engineering: $_____/Day

Rate per one round trip (Including expenses) to the site: $_____/Day

AFFIDAVIT OF BIDDER

The final payment of retained amount due the Bidder on account of the Purchase Order shall not become due until the Bidder has furnished to the Owner through the Engineer an affidavit signed, sworn, and notarized to the effect that all payments for Material, services, or any other reason in connection with this Purchase Order have been satisfied and that no claims or liens exist against the Bidder in connection with this Purchase Order. In the event that the Bidder cannot obtain similar affidavits from Subcontractors to protect the Bidder and the Owner from possible liens or claims against the Subcontractor, the Bidder shall state in his affidavit that no claims or liens exist against any Subcontractor, and if any liens or claims appear afterward, the Bidder shall save the Owner harmless on account thereof.

Bidder: _____

By: _____

Date: _____

FORM OF EXCEPTIONS

BIDDER: _____

OWNER: GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

PROJECT DESCRIPTION TUBULAR STEEL STRUCTURES FOR THE DICKINSON AVENUE TO FROG LEVEL ROAD 115 kV TRANSMISSION LINE, R-2250 NCDOT RELOCATION

INSTRUCTIONS: The following is a list of exceptions to the Bidding Documents and/or Technical Specifications pertaining to the furnishing of the subject materials. Bidders shall identify each exception by Specification page and paragraph number on this form. The omission of exception implies complete compliance with Plans and Specifications.

BID DOCUMENT/ SPECIFICATION PAGE NO. AND PARAGRAPH	EXCEPTION/VARIATION

BID DOCUMENT/ SPECIFICATION PAGE NO. AND PARAGRAPH	EXCEPTION/VARIATION

BID BOND

KNOW ALL MEN BY THESE PRESENT, THAT WE _____

_____

_as Principal, and _____

as Surety, who is duly licensed to act as Surety in North Carolina, are held and firmly bound unto the Greenville Utilities Commission, Greenville, North Carolina, as Obligee, in the penal sum of _____

_____ DOLLARS ($_____

_____) (5% Bid Bond), lawful money of the United States of America, for the payment of which, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these present.

SIGNED, Sealed and dated this _____ day of _____, 2017.

WHEREAS, the said Principal is herewith submitting a Proposal for

TUBULAR STEEL STRUCTURES FOR THE
DICKINSON AVENUE TO FROG LEVEL ROAD 115 kV TRANSMISSION LINE
R-2250 NCDOT RELOCATION

and the Principal desires to file this Bid Bond in lieu of making the cash deposit as required by the bidding documents contained herein;

NOW, THEREFORE, THE CONDITION OF THE ABOVE OBLIGATION is such that if the principal shall be awarded the Contract for which the bid is submitted and shall accept the Contract within ten (10) days after the award of same to the principal, then this obligation shall be null and void; but if the principal fails to so accept such Contract as required by the bidding documents contained herein, the Surety shall, upon demand, forthwith pay to the Obligee the amount set forth in the first paragraph hereof, and upon failure to forthwith make such payment, the Surety shall pay the Obligee an amount equal to double the amount of this Bid Bond as set forth in the first paragraph hereof. Power of Attorney from the Surety to its Attorney-in-Fact is attached hereto.

_____
Principal

By _____(SEAL)

_____
Corporate Surety

By _____(SEAL)

Letter of Compliance to E-Verify for Greenville Utilities Commission

1. I have submitted a bid for contract or desire to enter into a contract with the Greenville Utilities Commission;

2. As part of my duties and responsibilities pursuant to said bid and/or contract, I affirm that I am aware of and in compliance with the requirements of E-Verify, Article 2 of Chapter 64 of the North Carolina General Statutes, to include (mark which applies):

3. ____ After hiring an employee to work in the United States I verify the work authorization of said employee through E-Verify and retain the record of the verification of work authorization while the employee is employed and for one year thereafter; or

4. ____ I employee less than twenty-five (25) employees in the State of North Carolina.

5. As part of my duties and responsibilities pursuant to said bid and/or contract, I affirm that to the best of my knowledge and subcontractors employed as a part of this bid and/or contract, are in compliance with the requirements of E-Verify, Article 2 of Chapter 64 of the North Carolina General Statutes, to include (mark which applies):

6. ____ After hiring an employee to work in the United States the subcontractor verifies the work authorization of said employee through E-Verify and retains the record of the verification of work authorization while the employee is employed and for one year thereafter; or

7. ____ Employ less than twenty-five (25) employees in the State of North Carolina.

Specify subcontractor: _____

_____ (Company Name)

By: _____ (Typed Name)

_____ (Authorized Signatory)

_____ (Title)

_____ (Date)

LETTER OF COMPLIANCE TO THE IRAN DIVESTMENT ACT CERTIFICATION

Name of Vendor or Bidder: _____

_____

IRAN DIVESTMENT ACT CERTIFICATION
REQUIRED BY N.C.G.S. 143C-6A-5(a)

As of the date listed below, the vendor or bidder listed above is not listed on the Final Divestment List created by the State Treasurer pursuant to N.C.G.S. 143-6A-4.

The undersigned hereby certifies that he or she is authorized by the vendor or bidder listed above to make the foregoing statement.

Signature Date

Printed Name Title

GREENVILLE UTILITIES COMMISSION

By: _____
Anthony C. Cannon

Title: General Manager/CEO
(Authorized Signatory)

Date: _____

Attest: _____

Name (Print): Amy Carson Quinn

Title: Executive Secretary

Date: _____

(OFFICIAL SEAL)

COMPANY NAME:

By: _____

Name (Print): _____

Title: _____
(Authorized Signatory)

Date: _____

Attest: _____

Name (Print): _____

Title: Secretary

Date: _____

(OFFICAL SEAL)

This instrument has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act.

By: _____
Jeff W. McCauley

Title: Chief Financial Officer

Date: _____

APPROVED AS TO FORM AND LEGAL CONTENT:

By: _____
Phillip R. Dixon

Title: General Counsel

Date: _____

INSERT

ADDENDA / CLARIFICATIONS / BULLETINS

Instructions to Bidders, 5. Bulletins and Addenda

GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

TUBULAR STEEL STRUCTURES
FOR THE
DICKINSON AVENUE TO FROG LEVEL ROAD
115 kV TRANSMISSION LINE
R-2250 NCDOT RELOCATION

SCHEDULE 1

STEEL TRANSMISSION STRUCTURES
WEATHERING STEEL, GRADE 65 ksi (Section 5.5)
WITH CORROCOTE BELOW GRADE PROTECTION

Structure Number	Pole Ht./Class *	Min. Moment Capacity 5′ From Top (ft-kips)	Caisson Diameter **	Minimum Caisson Thickness	Embed-ment Depth	Quan-tity	Unit Weight (lbs)	Unit Price	Extended Price
Transmission Poles – Vibratory Pole Base (VPB) – (Weathering Steel)									
1	90/S-06.5	50	3′-0″	0.375″	21′-0″	1		$	$
4	90/S-06.5	50	3'-0"	0.375″	21′-0″	1		$	$
5	90/S-09.0	72	3'-0"	0.375″	21′-0″	1		$	$
6	90/S-06.5	50	3'-0"	0.375″	21′-0″	1		$	$
7	90/S-10.0	80	3'-0"	0.375″	21′-0″	1		$	$
8	90/S-06.5	50	3'-0"	0.375″	21′-0″	1		$	$
9	90/S-06.5	50	3'-0"	0.375″	21′-0″	1		$	$
10	95/S-07.4	57	3'-0"	0.375″	25′-0″	1		$	$
11	95/S-06.5	50	3'-0"	0.375″	25′-0″	1		$	$
12	95/S-06.5	50	3'-0"	0.375″	25′-0″	1		$	$
13	95/S-06.5	50	3'-0"	0.375″	25′-0″	1		$	$

** Pole class designation will be defined by either the current RUS Standard Steel Pole Class or as an Unguyed Designation.*
*** Refer to drawing # TMF-VPB for vibratory pole base details.*

GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

TUBULAR STEEL STRUCTURES
FOR THE
DICKINSON AVENUE TO FROG LEVEL ROAD
115 kV TRANSMISSION LINE
R-2250 NCDOT RELOCATION

SCHEDULE 1

STEEL TRANSMISSION STRUCTURES
WEATHERING STEEL, GRADE 65 ksi (Section 5.5)
WITH CORROCOTE BELOW GRADE PROTECTION

Structure Number	Pole Ht./Class*	Maximum Caisson Diameter ***	Minimum Caisson Thickness	Vibratory Embedment Depth	Quantity	Unit Weight (lbs)	Unit Price	Extended Price
Transmission Poles – Surface Mounted Flange Vibratory Pole Base (VPB) – (Weathering Steel)								
2	75/ENG**	3′-10″	0.375″	30′-0″	1		$	$
3	75/ENG**	3′-10″	0.375″	30′-0″	1		$	$
14	70/ENG**	3′-10″	0.375″	33′-0″	1		$	$

** Pole class designation will be defined by either the current RUS Standard Steel Pole Class or as an Unguyed Designation.*
*** Refer to Load Trees in Attachment B and/or PLS-Pole .bak & .lca files.*
**** Adjust VPB flange placement such that the pole butt sits 2'-0" above ground line. (i.e. Pole top for 75/ENG will be 77' A.G.H.) Refer to drawing # TMF-VPB-F-A for surface mounted flange vibratory pole base details.*

GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

TUBULAR STEEL STRUCTURES
FOR THE
DICKINSON AVENUE TO FROG LEVEL ROAD
115 kV TRANSMISSION LINE
R-2250 NCDOT RELOCATION

SCHEDULE 2

STEEL TRANSMISSION STRUCTURES
GALVANIZED STEEL A572, GRADE 65 ksi (Section 5.5)
WITH CORROCOTE BELOW GRADE PROTECTION

Structure Number	Pole Ht./Class *	Min. Moment Capacity 5′ From Top (ft-kips)	Caisson Diameter	Minimum Caisson Thickness	Embed-ment Depth (10% +2')	Quan-tity	Unit Weight (lbs)	Unit Price	Extended Price
Transmission Poles – Direct Embedded (Galvanized)									
NA	70/S-04.2	32	NA	NA	9'-0"	**4**		$	$
NA	75/S-04.2	32	NA	NA	9'-6"	**6**		$	$
NA	80/S-04.2	32	NA	NA	10'-0"	**6**		$	$
NA	85/S-04.2	32	NA	NA	10'-6"	**3**		$	$
NA	90/S-04.2	32	NA	NA	11'-0"	**3**		$	$

** Pole class designation will be defined by either the current RUS Standard Steel Pole Class or as an Unguyed Designation.*

GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

TUBULAR STEEL STRUCTURES
FOR THE
DICKINSON AVENUE TO FROG LEVEL ROAD
115 kV TRANSMISSION LINE
R-2250 NCDOT RELOCATION

TABULATION OF UNIT PRICES

SCHEDULE NO. 1 – TOTAL PRICE	$ _____
SCHEDULE NO. 2 – TOTAL PRICE	$ _____
	_____

NOTE: *Greenville Utilities Commission reserves the right to accept or reject, at its sole discretion, the material prices quoted for Schedules 1 and 2 based on the unit prices quoted and/or the Total Proposal Price. Foundation Schedule 1-1 shall be included with the corresponding pole schedule.*

GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

TUBULAR STEEL STRUCTURES
FOR THE
DICKINSON AVENUE TO FROG LEVEL ROAD
115 kV TRANSMISSION LINE
R-2250 NCDOT RELOCATION

DELIVERY SCHEDULE

Shop Drawings		Delivery		
For Approval	Engineer's Approval	Start	Complete	Total

Schedule 1

_____ Wks. + 1 Wks. + _____ Wks. + _____ Wks. = _____ Wks.

Schedule 2

_____ Wks. + 1 Wks. + _____ Wks. + _____ Wks. = _____ Wks.

If the undersigned is the Successful Bidder, the shipping points shall be the designated structure locations or as designated otherwise by the Owner (Material Yard at 3280 Macgregor Downs Road, Greenville, NC 27858) and the materials and equipment will be delivered to the Owner in _____calendar days after notification of the Award of Purchase Order by the Owner. The Bidder shall include one (1) week for Engineer to review and return approval drawings.

Note: ***The Owner is seeking delivery of structures to begin within fifteen (15) weeks after receipt of the Purchase Order and to be completed within nineteen (19) weeks.***

Owner requests that deliveries be scheduled to the site in an organized and timely manner. Deliveries shall be steady, with no more than five (5) business days between trucks, and not-to-exceed four (4) weeks duration from start to finish.

The Materialman further declares that he has examined the site of the work and informed himself fully regarding all conditions pertaining to the locations where the work is to be done, examined the Specifications for the work and the Purchase Order Documents relative thereto, read all special provisions furnished prior to the opening of the bids, and satisfied himself relative to the work to be performed.

The Materialman proposes and agrees that if the following schedule or schedules of this Proposal are accepted, he will contract with Greenville Utilities Commission in the Form of a Purchase Order specified, to furnish all necessary materials and equipment, except materials and equipment specified to be furnished by the Owner or others, complete and in accordance with the Plans, Specifications, and Purchase Order Documents, to the full and entire satisfaction of the Owner, with a definite understanding that no money will be allowed for extra work except as set forth in the General Conditions and Purchase Order Documents, and as cited on Change Order Forms.

The following information should be supplied regarding the materials and equipment on which this bid is based:

Manufacturer: _____

Location or Manufacturing Facility: _____

Other Utilities Purchasing Recent Units of Similar Design: _____

_____

_____

GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

TUBULAR STEEL STRUCTURES FOR THE DICKINSON AVENUE TO FROG LEVEL ROAD 115 kV TRANSMISSION LINE R-2250 NCDOT RELOCATION

TECHNICAL SPECIFICATIONS

1.0 SCOPE

This specification covers the design, materials, welding, inspection, protective coatings, drawings, and delivery of steel transmission structures including pipe piles, drop-in plates, thru-vangs, leveling bolts, crossarms, ladders and anchor bolt cages used for constructing overhead transmission lines. The proposal submitted by the manufacturer shall include field bolts, locknuts, vangs, attachment provisions for arms and/or insulators, anchor bolts, base plates, and other necessary items to make a complete structure per the following specifications:

1.1 The Manufacturer shall provide quotations for the following schedules:

Schedule 1: Steel Transmission Structures – Galvanized Steel A572, Grade 65 with Corrocote Below Grade Protection

1.2 Drawings

All poles shall conform to the Drawings included herewith, all of which form a part of these Specifications.

2.0 DEFINITIONS

a. Cambering – the fabricating of a slight convex curve in a pole or crossarm

b. D/t – the ratio of the diameter of a tubular pole to the steel plate thickness

c. Engineer – a registered or licensed person, who may be a staff employee or an outside consultant, and who provides engineering services. Engineer also includes duly authorized assistants and representatives of the licensed person.

d. Ground line – a designated location on the pole where the surface of the ground will be after installation of a direct embedded pole

e. Overload factors (OLF) – a multiplier which is applied to each of the vertical,

transverse and longitudinal structure loads to obtain an ultimate load

f. P-delta moment – secondary moment created by the vertical loads acting on the structure when the structure deflects from its unloaded position

g. Point-of-fixity – location on the pole at ground line or below ground line where the maximum moment occurs

h. Raking – the practice of installing a straight pole out of plumb, or at an inclined angle

i. W/t – ratio of the width of the pole (flat-to-flat) to the plate thickness

j. Ultimate load – the maximum design load which includes the appropriate overload factor specified

3.0 CODES AND STANDARDS

Codes, standards, or other documents referred to in this specification shall be considered as part of this specification. The following codes and standards are referenced:

a. American Institute of Steel Construction (AISC), *Specification for the Design, Fabrication and Erection of Structural Steel for Buildings*, latest edition.

b. American Society of Civil Engineers (ASCE) Standard, *Design of Steel Transmission Pole Structures*, Manual 48, latest edition.

c. American Society for Testing and Materials (ASTM), various standards, latest version.

d. American Concrete Institute (ACI), *Building Code Requirements for Reinforced Concrete*, ACI 318, latest edition.

e. American Welding Society (AWS), *Structural Welding Code*, AWS D1.1, latest edition.

f. American National Standards Institute (ANSI), *National Electrical Safety Code*, ANSI C2, latest edition.

g. Society for Protective Coatings (SSPC, formerly Steel Structure Painting Council), *Surface Preparation Specification*, SSPC SP6/NACE NO. 3, latest edition.

4.0 CONFLICT BETWEEN THIS SPECIFICATION, DRAWINGS, AND REFERENCED DOCUMENTS

In the event of conflict between this specification and the above referenced documents, the requirements of this specification shall take precedence. In the case of conflict between

several referenced documents, the more stringent requirement shall be followed. If a conflict exists between this specification or the referenced documents and the attached drawings, the attached drawings shall be followed. If clarification is necessary, contact the Owner or Owner's representative.

5.0 GENERAL REQUIREMENTS

The design, fabrication, allowable stresses, processes, tolerances, and inspection shall conform to the American Society of Civil Engineers (ASCE) Standard, *Design of Steel Transmission Pole Structures, Manual 48-11,* latest edition, with the following additions and/or exceptions:

5.1 Pole Structure Design

5.1.1 Pole designs shall be prepared from the attached specification, configuration drawings and design loads. PLS-CADD printouts may be provided as part of these specifications with minimum design loads shown in the 'Structure Loads' column. The structure shall be capable of withstanding all specified loading cases including secondary stresses from foundation movements ~~when specified in Attachment C~~, but not considering the possible restraining effect of conductors or shield wires. The structure shall withstand the loads without failure, permanent distortion, or exceeding any specified deflection limitations. Loads are in pounds (lbs.) and include all appropriate overload factors. PLS-CADD "LCA" files may be supplied in lieu of printouts.

5.1.2 Vibratory Pole Bases (VPB) diameter for the non-tapered section shall be as indicated on Drawing No. TMF-VPB in Attachment D. A circumferential weld shall connect the tapered section to the non-tapered section. See Drawing No. TMF-VPB in Attachment D. Tapered section of Vibratory Pole Bases shall match up with pole taper. Permanent identifiable marks are required on the Vibratory Pole Bases including nameplate, angle bisect and/or transverse axis orientation for proper alignment prior to implanting into ground.

a. Vibratory Pole Base design shall meet ASCE Manual 48-11 for local buckling.

b. Vibratory Pole Base shall have a minimum wall thickness of three-eighths inches (3/8″).

c. The Vibratory Pole Base shall be capable of withstanding all specified load cases including secondary stresses.

d. Vibratory Pole Bases of angled structures shall have a permanent identifiable mark indicating the bisect of the associated structure. Vibratory Pole Bases of tangent structures shall have a permanent identifiable mark indicating the transverse axis of the associated structure. This will help facilitate proper orientation.

e. Frequency and stroke amplitude ranges for the vibratory hammer shall be provided by the manufacturer.

5.1.3 Wind pressures shown in the loading criteria shall be multiplied by the appropriate shape factor applied to the poles. Pressures in psf shall be computed as follows:

$$p = W \times C_d$$

Where p = pressure on projected area of the pole normal to wind, W = wind pressure, and C_d = shape (or drag) factor.
Shape factors for computing the wind on poles are:

Round	1.0
Hexagon	1.4
Octagon	1.4
Dodecagon	1.0
Square	1.6

5.1.4 The maximum design unit stress under full design load shall be the minimum yield strength as stated in applicable ASTM specifications for the particular application and types of loads, including load factors.

5.1.5 Poles shall be designed with a minimum number of joints. Field welding shall not be allowed as part of the design of a new pole. The shaft joints to be made in the field shall be slip joints or bolted flange joints. Slip joint length shall be at least one and one-half (1-1/2) times the largest inside diameter of the female section. Bolted flange joints may be used for medium angle and heavy angle guyed structures and X-braced H-frame structures. If approved by the Owner or Owner's representative, a strap across the pole splice to prevent separation of the male and female sections of the pole may be used for X-braced H-frame structures. Approval must be obtained prior to bid.

5.1.5.1. Manufacturer shall verify slip joint fit before shipment. Joints should not interfere with vangs, through holes, ladder clips, grounding provisions, or jacking nuts.

5.1.5.2. Sufficient jacking lugs and permanent orientation marks shall be provided at all slip joints to ensure proper alignment and complete overlap of the joint.

5.1.6 The ultimate load in guys shall not exceed sixty-five percent (65%) of the rated breaking strength of the guy.

5.1.7 Design of anchor bolts shall be in accordance with the latest edition of ACI-318, *Building Code Requirements for Reinforced Concrete*, assuming a concrete strength as specified by the Owner.

5.1.7.1 When anchor bolts are specified, they shall have the top two feet (2′-0″) galvanized. Anchor bolts shall be threaded at the top end a distance equal to the base plate thickness, plus the thickness of two (2) anchor bolt nuts, plus two and one-half inches (2-1/2″). Each anchor bolt shall include two (2) heavy hex nuts.

5.1.7.2 Welding on anchor bolts will only be allowed in the bottom twelve inches (12″). Only one length of anchor bolt shall be used on each pole. Anchor bolts/clusters shall have a permanent mark indicating the structure type, structure number, orientation, and top of concrete.

5.1.7.3 Anchor bolts shall be designed to be shipped as a rigid cage with top and bottom plates holding the anchor bolts in place. The anchor bolt thread shall be protected during shipping. The anchor bolts shall be welded to the holding plate in the bottom of the cage. The top template shall be designed to be removable and to support the assembled cage during lifting and setting operations without detrimental deformations. Bolt clusters shall be designed to be rigid enough to withstand the normal jolts of shipping, handling and installation with no displacement of bolts from the proper positions within the cluster.

5.1.7.4 The removable template at the top shall have a set of marks to show the centerline for tangent structures and the angle bisector for angle structures. If the angle bisector is unclear due to multiple line angles on the structure, the anchor bolt drawings must clearly denote the anchor bolt orientation in relationship to the line angles. The set of marks shall be (2) marks along the same line 180º to each other. Matching marks are to be on the base plate of the structure so proper alignment can be made.

5.1.8 Minimum plate thickness for all pole components shall be three-sixteenths inch (3/16″). Minimum tip diameter for all poles shall be ten inches (10″).

5.1.9 Structures which are to be direct embedded shall have bearing plates. Bearing plates shall have a diameter not more than two inches (2″) greater than the maximum pole diameter.

5.1.9.1 Galvanized poles shall have a drain hole at the bottom. The drain hole shall not be more than 20% of the bottom plate surface area.

5.1.9.2 Direct embedded steel poles shall have ground sleeves. Ground sleeves shall have a minimum length of four feet (4′-0″) centered at groundline.

5.1.9.3 The Ground sleeve shall have a minimum thickness of three-sixteenths inch (3/16″) and shall be centered at the ground line. A seal weld shall be provided around the ground sleeve. The ground sleeve shall not be considered in strength calculations.

5.1.10 Poles shall have nearly a uniform taper throughout their entire length. The maximum difference in tapers between two (2) pole sections measured by the diameters shall be .20 inch/ft. for poles with variable taper.

5.1.11 Poles with elliptical cross sections shall have a minor axis dimension equal to at least seventy-five percent (75%) of the major axis dimension.

5.1.12 Engineered/Unguyed Structures

Structure deflections at pole top shall be calculated under camber loading. Structure height shall be the height of the pole from the top of the base plate, or designated ground line, to the top. See load diagrams or PLS-CADD printouts, 'Structure Loads' column for camber loading.

5.1.12.1 Structures may be pre-cambered if the pole deflection exceeds one percent (1%). Deflections less than one percent (1%) shall be raked as necessary in the field. The Materialman shall provide a pre-cambered summary and clearly denote the pre-camber/rake orientation on the structure drawings. **(Raking is Not Applicable for this Project)**

5.1.12.2 The Materialman shall use the Loading Diagrams provided in Attachment B or PLS-CADD printouts to design the designated unguyed structures. The Materialman is responsible for determining the "worst-case" orientation of the wind load in combination with the tension and apply it in the design calculations.

5.1.12.3 The Materialman shall calculate the deflections for the sixty degrees Fahrenheit (60ºF) initial tension and sixty degrees Fahrenheit (60ºF) final tension load cases. The Materialman shall limit the difference in deflection produced by these two (2) load cases to six inches (6″) or less.

5.1.12.4 Deflections of single-shaft structures under camber loading shall not exceed one (1.0%) percent of the structure height.

5.1.12.5 Deflections of H-Frame structures due to the wire tension change across the structure and any angle resultant tension, under camber

loading, shall be no more than one half (1/2) the top diameter of the designed tubular steel pole.

5.1.12.6 Deflections of switch structures under factored loading shall not exceed two (2%) percent of the structure height under all loading conditions.

Switch support beams shall be checked for deflection. Engineer's drawings will show deflection limitations and/or minimum switch support beam diameter. **(Not applicable for this project)**

5.1.12.7 The manufacturer is responsible for repairing or replacing any structures which are delivered to the site with manufacturing errors. Repair and/or replacement costs shall include the structure itself, as well as any associated construction costs.

5.1.12.8 If pole raking is necessary due to deflection, the raking dimension and orientation shall be clearly marked on the Materialman's Detail Drawings.

5.1.12.9 Switch structure equipment loadings and attachment details shall be obtained by the Pole Manufacturer through coordination with the specified Switch Manufacturer. **(Not applicable for this project)**

5.1.12.10 If shop cambering is required, the manufacturer shall pre-fit multi-piece poles together prior to cambering.

5.1.12.11 The manufacturer shall verify at the plant prior to shipment that the appropriate orientation and magnitude of pre-camber is built into those structures requiring shop cambering.

5.1.13 Standard Class Designations

5.1.13.1 Tangent and guyed angle structures have been specified using RUS Standard Steel Pole Class Designations shown in Table 1 unless noted otherwise.

5.1.13.2 Pole designs shall be prepared for the attached Standard Class design loads. The poles shall be designed to meet ASCE Manual No. 48-11, "Design of Steel Transmission Pole Structures," design methods. The point-of-fixity shall be considered to be located at a distance from the pole bottom that is equal to seven percent (7%) of the pole length.

The pole shall be symmetrically designed such that the strength required in any one direction shall be required in all directions about the longitudinal axis.

5.1.13.3 Using the corresponding values in Table 1, the poles shall be designed for the following requirements.

a. The pole shall develop the minimum ultimate moment capacity required in Table 1 at a distance of five feet (5′-0″) from the pole top.

b. The pole shall develop the minimum ultimate moment capacity above the point-of-fixity that is calculated by multiplying the tip load in Table 1 by the distance to the tip load.

c. The geometry and taper of the pole shall be uniform throughout their entire length (top to butt).

5.1.13.4 The poles shall be designed to withstand the specified tip loading in Table 1 without exceeding a pole deflection of ten percent (10%) of the pole length above the point-of-fixity when tested in accordance with ASCE Manual No. 48-11.

5.1.13.5 Overall length of poles shall be designed and manufactured in incremental lengths of five feet (5′-0″).

TABLE 1 - Strength Requirements

Standard Class Designations for Steel Poles	Minimum Ultimate Moment Capacity at 5 ft from Pole Top (ft. Kips)	Horizontal Tip Load Applied 2 ft from Pole Top (lbs.)
S-20.0	160	20000
S-19.0	152	19000
S-18.0	144	18000
S-17.0	136	17000
S-16.0	128	16000
S-15.0	120	15000
S-14.0	112	14000
S-13.0	104	13000
S-12.0	96	12000
S-11.0	88	11000
S-10.0	80	10000
S-09.0	72	9000
S-08.0	64	8000
S-07.4	57	7410
S-06.5	50	6500
S-05.7	44	5655
S-04.9	38	4875
S-04.2	32	4160
S-03.5	27	3510
S-02.9	23	2925
S-02.4	19	2405
S-02.0	15	1950

5.1.13.6 Poles shall be designed for the loads generated from handling and erecting without causing permanent deformation or damage to the pole when handled according to the manufacturer's instructions. Handling and erecting loads shall include but not be limited to, a one (1) point (tilting) pickup and a two (2) point (horizontal) pickup.

5.1.13.7 The maximum design unit stress shall be the minimum yield strength as stated in applicable ASTM specifications for the particular application and types of loads, including overload factors.

5.1.13.8 The top of the pole shall be permanently covered with a structural steel plate that is welded to the top of the pole. The pole shall be delivered with the pole cover attached in place.

5.1.13.9 Pole design and design calculations shall be the responsibility of

the manufacturer.

5.1.14 Arms shall be designed so the end of the arm is at the specified height under a loading of initial conductor tension, sixty degrees Fahrenheit (60ºF), no wind, and no overload factors. Arms shall not deflect vertically more than two inches (2″) at the end of the arm under heavy ice conditions (without any overload factors applied). See Attachment B for Design Loads and Guide Drawings.

5.1.14.1 Arms shall be upswept or straight, tapered, steel tubular members, of any cross-sectional type, which meet the dimensions shown on the attached drawings.

5.1.14.2 Arm end plate connection details for hardware attachment shall be typical of those shown on the attached drawings. The arms shall be hermetically sealed when a painted finish is specified. Galvanized arms shall have drain holes where appropriate

5.1.15 Lifting lugs are optional. The manufacturer shall supply all instructions for handling and erection of poles and arms.

5.1.16 Deadend plates or vangs shall be designed/checked for the maximum resultant loading from the appropriate Vertical, Transverse, and Longitudinal components in the load trees and/or columns labeled "Loads From Back Span" or "Loads From Ahead Span" in the PLS-CADD printout. All load cases shall be considered. Do not use the loads from the column labeled "Structure Loads" for designing/checking vang designs.

5.1.17 In the design of connections for vangs, brackets, or stiffeners attached to the pole shaft, care shall be taken to distribute the loads sufficiently to protect the wall of the pole from local buckling.

5.1.18 Thru-vang shall penetrate both sides of the pole with attachment holes on both sides.

5.1.19 Each pole shall be permanently marked on the pole shaft seventy-two inches (72″) above ground line and on the bottom of base plate or bearing plate with the following identifying information:

- Manufacturer's Identification
- Structure Type
- Height and Class
- Structure Number
- Ultimate Ground Line Moment
- Owner's Name
- Date Manufactured

Each Vibratory Pole Base shall be permanently marked on the shaft within six inches (6") above the groundline with the following information:

- Manufacturer's Identification
- Diameter and Length
- Structure Number
- Owner's Name
- Date Manufactured

The method of identification shall be approved by the Owner. In addition, there shall be clear indication or marks for handling or sling points, storage rack points, and lifting joints for standing the pole and vibratory pole base.

5.1.20 Grounding Attachments

5.1.20.1 One (1), two (2)-hole NEMA grounding pad shall be provided on the side of each pole as specified in the Structure Dimensions (Framing Drawings) located in Attachment A.

5.1.20.2 See Attachment D – Drawing No. TMS-5 for NEMA Grounding Pad Detail.

5.1.20.3 Grounding pads and threads shall not be painted or covered with other coatings.

5.1.20.4 Poles shall be pre-drilled with a nine-sixteenth inch (9/16″) hole behind each threaded hole of a two (2)-hole NEMA pad to permit the use of various bolt lengths in completing a grounding connection.

5.1.20.5 One (1) heavy hex, stainless steel grounding nut shall be provided where indicated on Structure Dimensions (Framing Drawings). The grounding nut shall have standard one-half inch (1/2″), thirteen (13) UNC threads. Threads shall not be painted or covered with other coatings.

5.1.21 Clips for removable ladders shall be located as shown on the enclosed Framing Drawings or as indicated in the specification. Each ladder clip shall be designed to support a minimum 1,200 lb. shear working load. The clips shall be welded to the pole surface. Ladder clips shall be located to avoid interference between ladders, other attachments, material and equipment to be mounted on the pole (See Attachment D Miscellaneous Drawings). **(Not applicable for this project)**

5.1.22 Removable step bolts shall be provided with spacing as indicated beginning eight feet (8′-0″) above ground line and extending to the structure top. Each step lug and step bolts shall be capable of withstanding a minimum of 600 lb.

working load. Step bolts mounting nuts shall be spaced at one foot-three inches (1′-3″) and oriented to provide maximum ease of climbing. **(Not applicable for this project)**

5.1.23 Removable pole steps with permanent clips shall be provided as indicated (Drawing No. PS-1) beginning at ground line and extending to eight feet (8′-0″) above ground line. Pole steps and clips shall be spaced at one foot-three inches (1′-3″) and oriented to provide maximum ease of climbing. **(Not applicable for this project)**

5.1.24 Weathering steel structures shall be designed to eliminate water and refuse traps.

5.1.24.1 Tubular sections shall be sealed from moisture entering the inside of the pole. Factory drilled pole holes shall be plugged to prevent moisture intrusion during shipping. For field drilled poles and factory drilled poles, manufacturer shall provide silicon sealant to seal all through-bolt holes. Non-drilled poles when assembled shall be effectively sealed to prevent moisture intrusion.

5.1.24.2 Connections shall be designed to reduce the effect of pack-out by preventing moisture from entering the joint or by designing the connection to allow moisture to easily drain off.

5.1.24.3 Plastic plugs shall be installed in all nuts welded to the structure and all tapped holes.

~~5.1.25 Application requirements: (See Attachment C)~~

5.2 Pipe Pile Design **(Not applicable for this project)**

The design, fabrication, allowable stresses, processes, tolerances, and inspection shall conform to the latest edition ASTM 252, "Welded and Seamless Steel Pipe Piles" for the steel pipe pile and the latest edition ASTM A36 for the other associated steel material. Grade 2 shall be used for the pipe piles.

5.2.1 The pipe pile diameter shall be as indicated on Drawing No. TMF-SPPF in Attachment A. Piles shall be fabricated as round or 12-sided. The 12-sided pipe pile diameter shall be measured flat-to-flat.

5.2.2 All welding to be in accordance with the latest edition of AWS D1.1. Use appropriate electrode for steel grade types (E70 Min.). Circumferential and longitudinal welds are to be complete-penetration.

5.2.3 After fabrication, hot dip galvanize the pile as specified per ASTM A123. Provide additional holes if needed for handling during galvanizing.

5.2.4 Corrocote shall be applied to pipe pile from top of pile to ten (10') feet below

top of pile. See paragraph 5.5.1.d Coatings for the Embedded Portion of the Pole for details.

5.2.5 Pipe piles shall be stamped with one-inch (1") lettering indicating the structure number. Stamping shall be done at both ends of the pipe pile.

5.2.6 Pipe pile vendor shall provide the six (6) one-inch (1") diameter heavy hex galvanized nuts and six (6) one-inch (1") diameter by twelve inch (12") long galvanized leveling bolts and ensure these nuts and bolts are compatible with each other. This hardware shall be hot dip galvanized per ASTM A307.

5.2.7 Two (2) hole NEMA grounding pads shall be provided on opposite sides at two levels of the pipe piles as shown on Drawing TMF-SPPF located in Attachment A (Total of 4 grounding pads).

5.2.8 Reference Drawing TMF-SPPF for steel pipe pile fabrication details and all associated materials and hardware.

5.3 Materials

5.3.1 All materials shall comply with the applicable requirements of ASTM specifications. Any modifications to ASTM specifications must be approved by the Owner's representative prior to bidding.

5.3.2 Poles, arms, and conductor brackets shall conform with ASTM A36, ASTM A572, ASTM A581, ASTM A588, ASTM A871, or ASTM A595.

5.3.3 Base plate shall conform with ASTM A572, ASTM A588, ASTM A633, or ASTM A595.

5.3.4 Anchor bolts shall conform to ASTM A615, Grade 60 or 75.

5.3.5 Other bolts and nuts shall conform, as applicable, to ASTM A307, ASTM A325, ASTM A354, ASTM A394, or ASTM A687. Locknuts shall be provided for each structure bolt, or American Nut Company (ANCO) type self-locking nuts may be used. Locknuts shall be the galvanized MF or ANCO type.

5.3.6 Anchor bolts, structural plate, and weld material, shall meet ASCE requirements for Charpy tests.

5.3.7 For galvanized structures, steel used for the pole shaft and arms shall have a silicon content less than .06 percent.

5.3.8 Steel pipe piles shall conform, as applicable, to ASTM A252. All other steel material associated with the pipe pile shall conform to ASTM A36.

5.4 Fabrication

5.4.1 All welding shall be in accordance with the American Welding Society Code AWS D1.1, latest edition. Welders shall be qualified in accordance with AWS .1 welding procedures.

5.4.2 One hundred percent (100%) penetration welds shall be required in, but not limited to, the following areas:

- circumferential welds (C-welds) joining structural members,
- longitudinal welds in the female portion of the joint within the slip joint area, plus 6 inches;
- welds at the butt joints of back-up strips,
- base plate to shaft weld,
- longitudinal welds for a minimum length of three inches (3″) where there are adjacent C-welds, flange welds, base welds and ends of tubes.

5.4.3 Full penetration or equivalent ninety percent (90%) partial penetration with fillet overlap shall be used for arm-to-arm brackets, vang-to-plate shaft, and arm box joints.

5.4.4 Quality and acceptability of every inch of the full penetration welds shall be determined by visual and ultrasonic inspection.

5.4.5 All other penetration welds shall have sixty percent (60%) minimum penetration. Quality and acceptability of all welds other than full penetration welds shall be determined by visual inspection, supplemented by magnetic particle, ultrasonic or dye penetrant inspection.

5.4.6 All weld back-up strips shall be continuous the full length of the welds. Care shall be exercised in the design of welded connections to avoid areas of high stress concentration which could be subject to fatigue or brittle fractures.

5.4.7 Field welding shall not be permitted except with the Engineer's and Owner's approval and with the manufacturer's direction in repairing a pole.

5.4.8 All parts of the structure shall be neatly finished and free from kinks or twists. All holes, blocks, and clips shall be made with sharp tools and shall be clean-cut without torn or ragged edges.

5.4.9 Before being laid out or worked in any manner, structural material shall be straight and clean. If straightening is necessary, it shall be done by methods that will not injure the metal.

5.4.10 Shearing and cutting shall be performed carefully and all portions of the work shall be finished neatly. Copes and re-entrant cuts shall be filleted before cutting.

5.4.11 All forming or bending during fabrication shall be done by methods that will prevent embrittlement or loss of strength in the material being worked.

5.4.12 Holes for connection bolts shall be one-sixteenth inch (1/16″) larger than the nominal diameter of the bolts. Holes in the flange plates for bolted splices shall be one-eighth inch (1/8″) larger than the bolt diameter. Holes in the base plates for anchor bolts shall be three-eighths inch (3/8″) larger than the nominal diameter of the anchor bolts. The details of all connections and splices shall be subject to the approval of the Owner or his representatives.

5.4.13 Holes in steel plates which are punched must be smooth and cylindrical without excessive tear out or depressions. Any burrs that remain after punching shall be removed by grinding, reaming, etc.

5.4.14 Holes of any diameter may be drilled in plate of any thickness. Care shall be taken to maintain accuracy when drilling stacks of plates.

5.4.15 Holes may be made by use of a machine guided oxygen torch. Flame cut edges shall be reasonably smooth and suitable for the stresses transmitted to them.

5.4.16 The overall length of the assembled structure should not be less than six inches (6″) of the specified length and not more than twelve inches (12″).

5.4.17 Tolerances

Fabrication tolerances shall be as follows:

a. Length of single piece or flanged poles ± 3″

b. Cross section of poles: Diameter of 36″ or less +1/4″, -1/8″. Diameter greater than 36″ +1/2″, -1/4″, circumference of all poles -0″

c. Spacing between “arm to pole” connections vertically ± 3/4″

d. Location of hardware with respect to top of pole ± 1″

e. Pole Butt plate perpendicular to pole 1/16″ for 12″ as measured on a perpendicular axis

f. Straightness of pole ± 1/2″ from center line

g. Location of a drilled hole in a piece ± 1/8″

h. Spacing between holes: Base plates ± 1/8″, same connection ± 1/16″ (non-accumulative)

i. Anchor bolts: Length +3″, -0″; thread length +2″, -0″

j. Length of coated portion on anchor bolts +12″, -0″

k. Distance between anchor bolts in cluster ± 1/8″ (non-accumulative)

l. Arms: Length ± 1″, Rise ("W" dimension ± 1″ per 10′ of arm length)

m. Angles shown ± 2°

n. Length of overlap of slip joint, +5″, - 10% of slip joint length

o. Thru Vang Vertical Spacing ± 1/4″

p. Thru Vang Angle and Orientation ± 2°.

5.5 Finishes

5.5.1 The following finishes are acceptable: galvanizing, zinc primer and painting, weathering steel, and below grade coating.

a. Galvanizing – All structures and structural components which are hot-dip galvanized shall meet all the requirements of ASTM A123 or ASTM A153. Measures shall be taken to prevent warping and distortion according to ASTM A384 and to prevent embrittlement according to ASTM A143. Poles made of ASTM A588 steel shall not be galvanized due to the high silicon content of the steel. One (1) gallon of zinc enriched paint shall be provided with each five (5) poles. Provide detailed instructions of proper application and use of zinc enriched paint.

b. Zinc Primer and Painting – Poles which are to be painted shall be hermetically sealed to prevent corrosion of interior surfaces. After shot or sand blasting and cleaning in accordance with the *Steel Structure Painting Council's Surface Preparation Specification*, SSPC-SP6, a zinc primer of three (3) mils dry film thickness (DFT) and two (2) coats of finish paint, each three (3) mils DFT shall be applied to all exterior surfaces in accordance with the paint supplier's recommendations. One (1) gallon each of primer and finish paint shall be supplied with each five (5) poles. A guarantee against flaking or fading of the paint for a minimum of five (5) years shall be provided. **(Not applicable for this project)**

c. Weathering Steel – Steel shall conform to ASTM A588 or A871. After fabrication, poles made of weathering steel shall be cleaned of oil, scale, etc. in accordance with the *Steel Structure Painting*

Council's Surface Preparation Specification, SSPC-SP6, to ensure uniform and rapid formation of the protective oxide layer.

d. Coatings for the Embedded Portion of the Pole – When poles are to be directly embedded, or use a vibratory pole base, a sixteen (16) mil (minimum dry film thickness), two (2) component hydrocarbon extended polyurethane coating that is resistant to ultraviolet light shall be applied on the exposed surface of the embedded portion of the pole. The coating shall extend from the butt to two feet (2′-0″) above ground line or to the top jacking nut on the vibratory pole base, whichever is lower. Other coatings shall be approved by the Owner prior to their use**.**

5.5.2 Bolts and nuts with yield strengths under 100,000 psi shall be hot-dip galvanized per ASTM A153 and ASTM A143, or mechanically coated with zinc in accordance with ASTM B454, Class 50. Bolting materials with yield strengths in excess of 100,000 psi shall not be hot-dip galvanized. Instead, they shall be painted with zinc enriched paint or mechanically coated with zinc per ASTM B454, Class 50.

5.5.3 Compliance with coating thickness requirements shall be checked with a magnetic thickness gauge.

5.6 Inspection and Testing

5.6.1 The Owner and the Owner's designated agents shall have free entry at all times while work is being carried on, to all parts of the manufacturer's plant to inspect any part of the production of the poles covered by this specification.

5.6.2 Steel members which are bent or warped or otherwise improperly fabricated shall be properly repaired or replaced at the manufacturer's expense.

5.6.3 The cost of tests made by the manufacturer (except full scale load tests on poles), including cost of the certified test reports, shall be considered included in the price.

5.6.4 The manufacturer shall make tests in accordance with ASTM A370 and ASTM A673 to verify that the material used in the structures meets the impact properties.

5.6.5 Mill test reports showing chemical and physical properties of all material furnished under this specification shall be maintained by the manufacturer for a period of five (5) years and shall be traceable to the structure.

5.6.6 All plates over one and one-half inch (1-1/2″) thick shall be ultrasonically tested to assure against defects which could lead to lamellar tearing.

5.6.7 Welders or welding operators shall be qualified in accordance with the provisions of AWS D1.1.

5.6.8 The manufacturer shall make certified welding reports for each structure. The reports covering welding shall include all welds of a structure. Each weld shall be clearly identified; and the report shall consist of the method of testing, whether the weld is acceptable, the identification of the structure, the date, and the name and signature of the inspector. Records of welding procedure and welding operator test results shall be kept for six (6) years by the Materialman and shall be available for review by the Engineer or Owner.

5.7 Structure Testing **(Not applicable for this project)**

5.7.1 The structures which are to have full-scale load tests performed on them are listed in Attachment C.

5.7.2 Details of the test procedures and methods of measuring and recording test loads and deflections shall be specified by the manufacturer prior to testing and shall be subject to the review and approval of the Owner or his representative.

5.7.3 Deflections shall be recorded in the transverse and longitudinal directions when applicable. Deflection measurements shall be taken under the no load condition both before and after testing.

5.7.4 Material procurement for test poles shall be identical to material procurement procedures for regular production run poles.

5.7.5 A full report listing the results shall be submitted after completion of all testing. Copies of mill test reports shall be included in the load test report. The report shall also include a complete description of the load tests with diagrams and photographs.

5.7.6 The Owner or his representative reserves the right to be present during testing and shall be notified two (2) weeks prior to the start of structure fabrication.

5.8 Shipping

5.8.1 Each shipment shall be accompanied by a checklist of all parts, identifiable by structure type and number. Arms, bolts, and miscellaneous hardware will be identified by the list for match up with the respective pole shaft and shall be boxed or bundled. All parts required for any one structure shall be in one (1) shipment, if possible.

5.8.2 The Owner and Owner's representative shall be notified prior to shipment that such shipment is to take place, and they reserve the right to inspect the components prior to shipment. The notification shall give quantities; weight, name of common carrier used, and expected time of arrival with at least two (2) working days' notice of delivery. Delivery of all items of material

shall be made at such time as to permit unloading between the hours of 9:00 a.m. and 3:00 p.m., Monday through Thursday, holidays excluded.

5.8.3 The anchor bolts shall be welded to the holding plate in the bottom of the cage. A removable template shall be used at the top of the cage and shall be marked to show the centerline for tangent structures and the angle bisector for angle structures. Matching marks are to be on the base plate so proper alignment can be made. Bolt clusters shall be rigid enough to withstand the normal jolts of shipping and handling with no displacement of bolts from the proper positions within the cluster.

5.8.4 Unless otherwise agreed to by the Owner, the anchor bolt cage shall be shipped at least thirty (30) days prior to pole shipment.

5.8.5 Salt-treated wood blocking and urethane foams shall not be used when shipping or storing weathering steel poles.

5.8.6 Delivery shall be made either to a single designated location or to the individual structure locations.

6.0 INFORMATION TO BE SUPPLIED BY THE MANUFACTURER

6.1 Information to be Supplied with the Proposal

a. Calculated shipping weight of each structure and pipe pile excluding anchor bolts. Separate weights shall be given for crossarms and poles.

b. Calculated shipping weight of anchor bolts,

c. Ultimate ground line reactions (including overload factors) in poles and guy wires,

d. Anchor bolt size, length, and locations (bolt circle diameters)

e. Type of material of major components (ASTM number),

f. Description of pole and pipe pile shaft, including thickness, length, diameter, cross-sectional geometry, and method of fastening each shaft component,

g. Data showing the design of the arm, arm connections, arm attachment plates, and brackets,

h. Design exceptions,

i. Manufacturer's standards, physical and mechanical dimensions for all steel pole height and class combinations used in the project being bid on.

6.2 Documentation to be Supplied for the Owner's Approval Prior to Fabrication

Documentation includes final design calculations for pole shaft, base plate, anchor bolts, crossarms, and other appurtenances, including their connections for all structures. The following information shall be supplied:

a. For the loading cases with overload factors, the total shear, axial forces, moments, stresses or stress ratios, moments of inertia furnished, section moduli, cross-sectional areas, deflections w/t's for polygonal and d/t's for round cross sections at all splices, at arm attachment points (top and bottom), and at least every ten feet (10′-0″) along the pole.

b. For the critical loading case, shear and axial forces, moments, stresses, section moduli, cross-sectional areas at the arm connections, bolt stresses in the arm connection, and deflection at the end of the arm.

c. Anticipated deflections at the top of the pole and at the ends of the arms shall be indicated for each pole for the normal, everyday loading condition of sixty degrees Fahrenheit (60ºF), no wind, no overload factors.

d. For all specified loading cases, reactions and ground line moments shall be supplied.

e. Detail drawings for each structure type giving weights of structure components, dimensions, and bill of materials.

f. Assembly instructions and erection drawings. Slip joint lengths and allowable tolerances. Special handling instructions.

6.3 Final Documents shall be supplied to the Owner for the items in paragraph 6.2.e. after erection of all structures and prior to final payment

6.4 Test Reports (as requested)

a. Certified mill test reports for all structural material,

b. Certified welding reports for each structure,

c. Impact property test reports showing that the material used in the structures meets the impact properties,

d. Test reports on coating thickness,

e. Report of structure testing, when required, including photographs, diagrams, load trees, etc.,

f. Material, workmanship, inspection travelers, and material certified mill test reports shall be maintained on file for a minimum of six (6) years by the Materialman, and shall be made available to Greenville Utilities Commission

or the Engineer upon request at no charge.

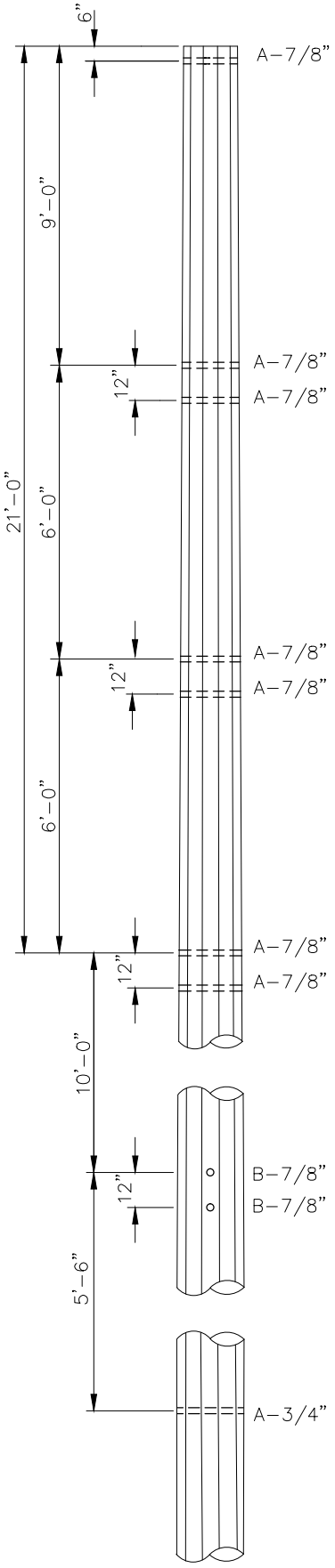
7.0 APPROVAL, ACCEPTANCE, AND OWNERSHIP

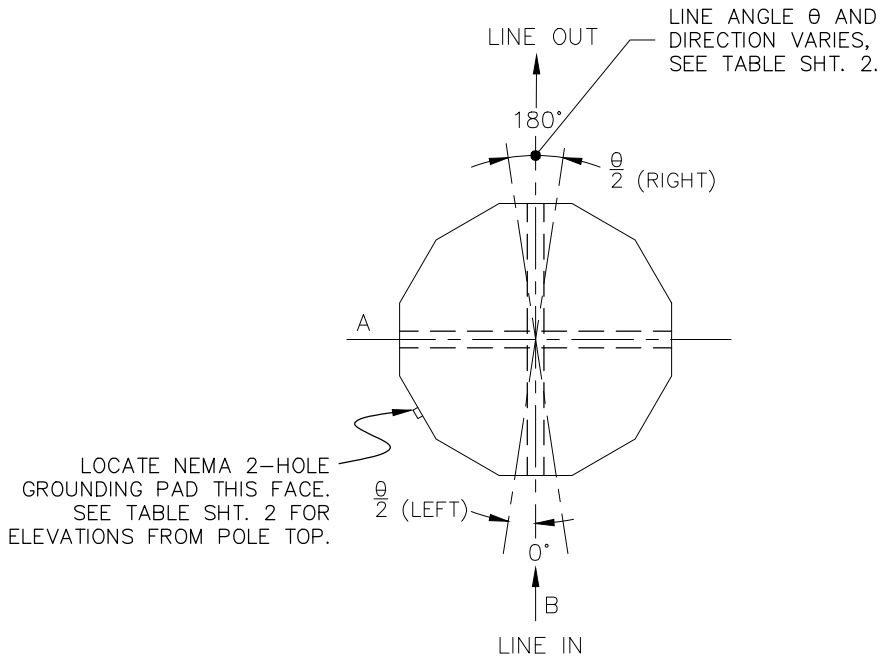
7.1 Final designs must be approved by the Engineer before material ordering and fabrication. Material ordering and fabrication prior to approval will be at supplier's risk. It is understood that award of this contract does not constitute acceptance of design calculations submitted with the bid, if corrections are required in the final structure designs due to manufacturer's errors, omissions, or misinterpretations of the specifications, the quoted price shall not change. Approval of the drawings and calculations by the Engineer does not relieve the supplier of responsibility for the adequacy of the design, correctness of dimensions, details on the drawings, and the proper fit of parts.

7.2 After delivery, the poles will be inspected and shall be free of dirt, oil blisters, flux, black spots, dross, tear-drop edges, flaking paint or zinc; and in general, shall be smooth, attractive, and unscarred. Poles not meeting this requirement shall be repaired or replaced by the fabricator at no additional cost to the Owner.

ATTACHMENT A

STRUCTURE DETAILS & DRAWINGS





NOTES:

1) LETTERS (i.e. "A" & "B") INDICATE THRU–HOLE LOCATIONS AND ORIENTATION.

2) LETTERS WITH DIMENSIONS (i.e. C–7/8") INDICATE THROUGH HOLES WITH DIAMETER FOR DRILLING. ALL HOLES ARE TO BE LOCATED ON THE CENTER OF A FLAT.

3) MINIMUM POLE TIP DIAMETER FLAT TO FLAT TO BE NO LESS THAN 10 INCHES.

4) REFER TO DRAWING SPFD–1 SHEET 2 OF 2 FOR LISTING OF STRUCTURES DESIGNED WITH SPFD–1 FRAMING.

GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

STEEL POLE FRAMING DRAWING
115 kV TRANSMISSION LINE
DICKINSON AVE TO FROG LEVEL RD
TP–115–S

Booth & Associates, LLC
5811 Glenwood Avenue | Raleigh, NC 27612 CONSULTING ENGINEERS NC F-0221

DWN.	AAI	DATE:	04/18/17
CKD.	ARD	APPD.	RSY
SCALE:	NONE		15–8097

DATE	REVISION

DWG. NO.
SPFD–1
1 OF 2

STRUCTURE NUMBER	POLE HEIGHT /CLASS*	CAISSON DIAMETER (ft)	EMBEDMENT (ft)	LINE ANGLE 0	NEMA 2-HOLE PADS		
					OHGW	NEUTRAL	POLE GROUND
1	90/S-06.5	3	21'-0"	N/A	1'-6"	37'-0"	68'-6"
4	90/S-06.5	3	21'-0"	N/A	1'-6"	37'-0"	68'-6"
5	90/S-09.0	3	21'-0"	3° 44' 14" RT	1'-6"	37'-0"	68'-6"
6	90/S-06.5	3	21'-0"	N/A	1'-6"	37'-0"	68'-6"
8	90/S-06.5	3	21'-0"	N/A	1'-6"	37'-0"	63'-0"
9	90/S-06.5	3	21'-0"	N/A	1'-6"	37'-0"	63'-0"
10	95/S-07.4	3	25'-0"	2° 10' 01" LT	1'-6"	37'-0"	63'-0"
11	95/S-06.5	3	25'-0"	N/A	1'-6"	37'-0"	63'-0"
12	95/S-06.5	3	25'-0"	N/A	1'-6"	37'-0"	63'-0"
13	95/S-06.5	3	25'-0"	1° 08' 36" LT	1'-6"	37'-0"	63'-0"

* POLE CLASS PER RUS STANDARD STEEL POLE DESIGNATION OR GROUNDLINE MOMENT (ft-kips)

GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

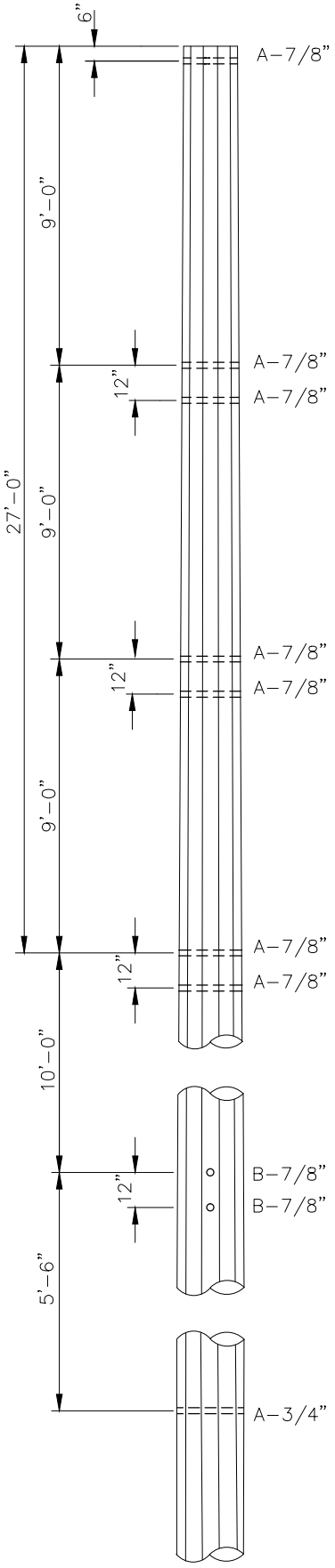
STEEL POLE FRAMING DRAWING
115 kV TRANSMISSION LINE
DICKINSON AVENUE TO FROG LEVEL ROAD
TP–115–S

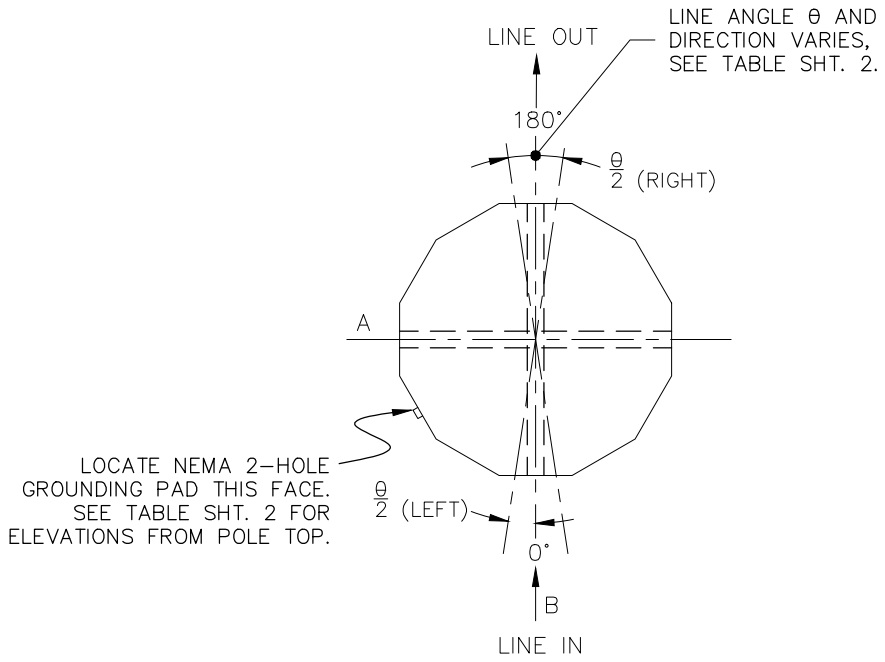
Booth & Associates, LLC
5811 Glenwood Avenue | Raleigh, NC 27612 CONSULTING ENGINEERS NC F-0221

DWN.	AAI	DATE:	04/18/17
CKD.	ARD	APPD.	RSY
SCALE:	NONE		14–7798

DATE	REVISION

DWG. NO.
SPFD–1
2 OF 2





NOTES:

1) LETTERS (i.e. "A" & "B") INDICATE THRU-HOLE LOCATIONS AND ORIENTATION.

2) LETTERS WITH DIMENSIONS (i.e. C-7/8") INDICATE THROUGH HOLES WITH DIAMETER FOR DRILLING. ALL HOLES ARE TO BE LOCATED ON THE CENTER OF A FLAT.

3) MINIMUM POLE TIP DIAMETER FLAT TO FLAT TO BE NO LESS THAN 10 INCHES.

GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

STEEL POLE FRAMING DRAWING
115 kV TRANSMISSION LINE
DICKINSON AVENUE TO FROG LEVEL ROAD R-2250 NCDOT RELOCATION
TP-115B2-S

Booth & Associates, LLC
5811 Glenwood Avenue | Raleigh, NC 27612 CONSULTING ENGINEERS NC F-0221

DWN.	AAI	DATE:	04/18/17
CKD.	ARD	APPD.	RSY
SCALE:	NONE		15-8097

DATE	REVISION

DWG. NO.
SPFD-2
1 OF 2

STRUCTURE NUMBER	POLE HEIGHT /CLASS*	CAISSON DIAMETER (ft)	EMBEDMENT (ft)	LINE ANGLE 0	NEMA 2-HOLE PADS		
					OHGW	NEUTRAL	POLE GROUND
7	90/S-10.0	3	21'-0"	N/A	1'-6"	37'-0"	68'-6"

* POLE CLASS PER RUS STANDARD STEEL POLE DESIGNATION OR GROUNDLINE MOMENT (ft-kips)

GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

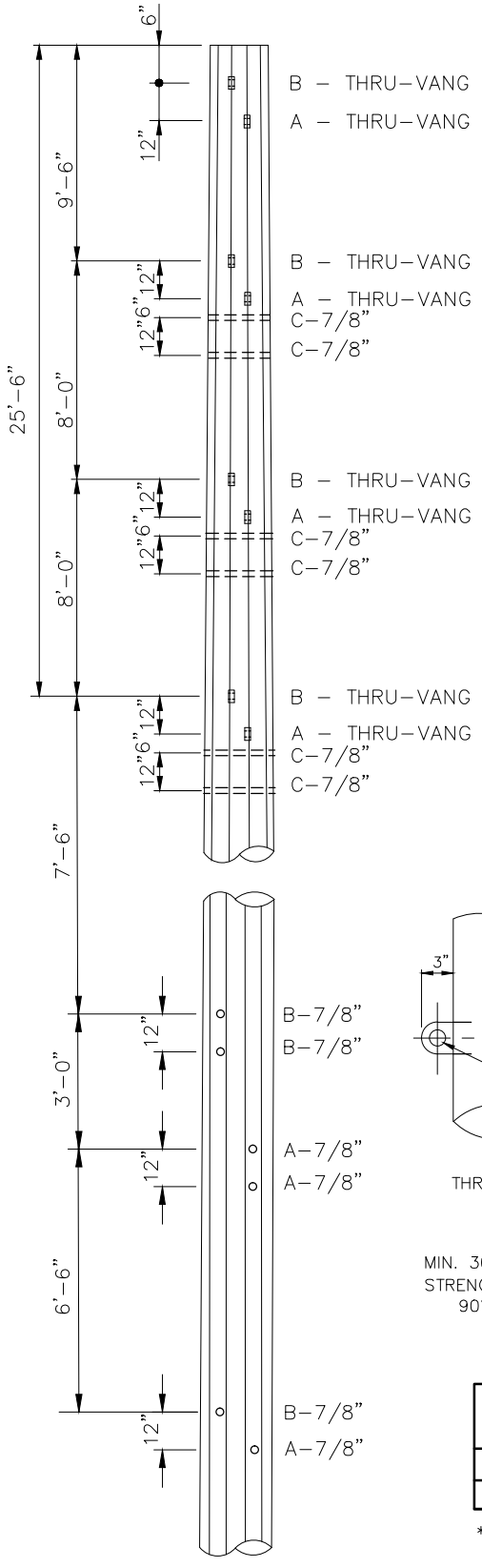
STEEL POLE FRAMING DRAWING
115 kV TRANSMISSION LINE
DICKINSON AVENUE TO FROG LEVEL ROAD
TP-115B2-S

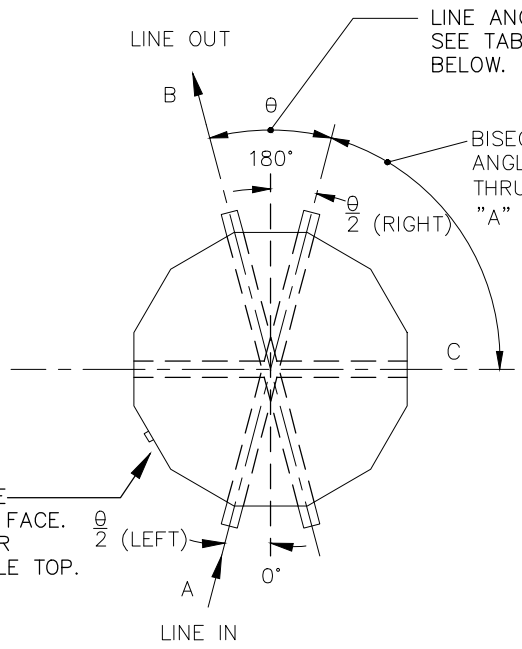
Booth & Associates, LLC
5811 Glenwood Avenue | Raleigh, NC 27612 CONSULTING ENGINEERS NC F-0221

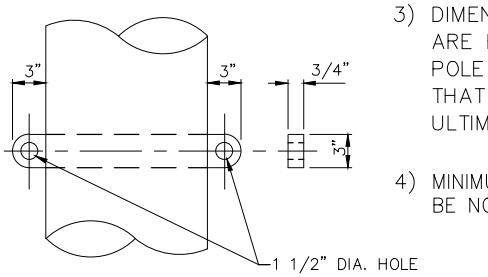
DWN.	AAI	DATE:	04/18/17
CKD.	ARD	APPD.	RSY
SCALE:	NONE		14-7798

DATE	REVISION

DWG. NO.
SPFD-2
2 OF 2







THRU–VANG DETAIL
TYPICAL
NTS

MIN. 30,000 lbs. ULTIMATE STRENGTH VANG REQUIRED 90° OR 45° LOAD

NOTES:

1) LETTERS (i.e. "A" & "B") INDICATE THRU–VANG AND/OR THRU–HOLE LOCATIONS AND ORIENTATION.

2) LETTERS WITH DIMENSIONS (i.e. C–7/8") INDICATE THROUGH HOLES WITH DIAMETER FOR DRILLING. ALL HOLES ARE TO BE LOCATED ON A FLAT.

3) DIMENSIONS SHOWN ON THRU–VANG DETAIL ARE REQUIRED TO ENSURE HARDWARE COMPATIBILITY. POLE MANUFACTURER IS RESPONSIBLE FOR VERIFYING THAT THE THRU–VANG STRENGTH EXCEEDS ULTIMATE STRENGTH REQUIREMENTS.

4) MINIMUM POLE TIP DIAMETER FLAT TO FLAT TO BE NO LESS THAN 10 INCHES.

STRUCTURE No.	HEIGHT/ CLASS*	EMBEDMENT DEPTH	LINE ANGLE θ	NEMA 2–HOLE PADS		
				OHGW	NEUTRAL	POLE GROUND
2	75/ENG	S.M.	24°56'24"LT.	2'–0"	44'–0"	73'–6"
14	70/ENG	S.M.	24°43'48"LT.	2'–0"	44'–0"	68'–6"

*POLE CLASS PER RUS STANDARD STEEL POLE DESIGNATION OR GROUNDLINE MOMENT (ft–kips)

GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

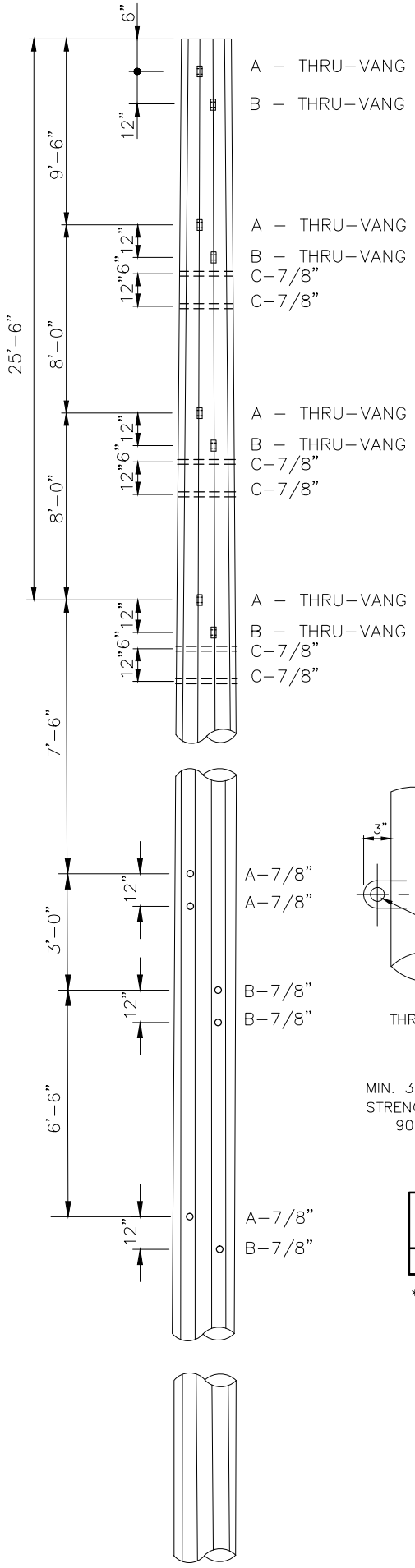
STEEL POLE FRAMING DRAWING
115 kV TRANSMISSION LINE
DICKINSON AVENUE TO FROG LEVEL ROAD R–2250 NCDOT RELOCATION
TP–5AA–S (IN LOW, OUT HIGH)

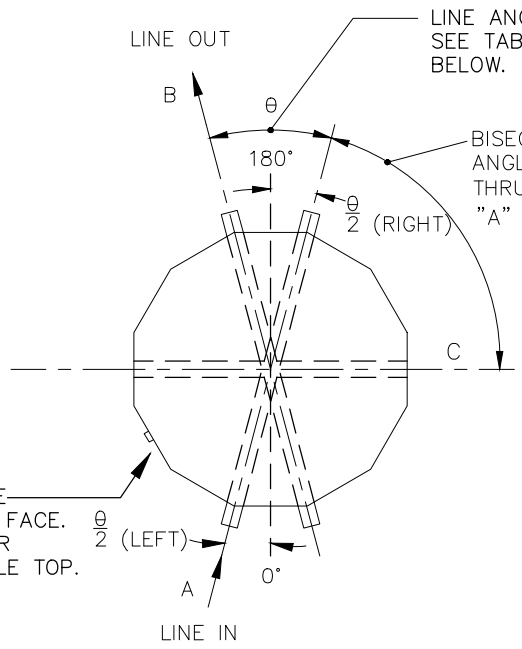
Booth & Associates, LLC
5811 Glenwood Avenue | Raleigh, NC 27612 CONSULTING ENGINEERS NC F-0221

DWN.	AAI	DATE:	04/18/17
CKD.	ARD	APPD.	RSY
SCALE:	NONE		15–8097

DATE	REVISION

DWG. NO.
SPFD–3
1 OF 1





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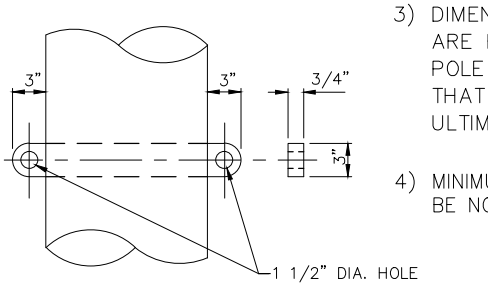


THRU–VANG DETAIL
TYPICAL
NTS

MIN. 30,000 lbs. ULTIMATE STRENGTH VANG REQUIRED 90° OR 45° LOAD

STRUCTURE No.	HEIGHT/ CLASS*	EMBEDMENT DEPTH	LINE ANGLE θ	NEMA 2–HOLE PADS		
				OHGW	NEUTRAL	POLE GROUND
3	75/ENG	S.M.	25°25'48"LT.	2'–0"	44'–0"	73'–6"

*POLE CLASS PER RUS STANDARD STEEL POLE DESIGNATION OR GROUNDLINE MOMENT (ft–kips)

GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

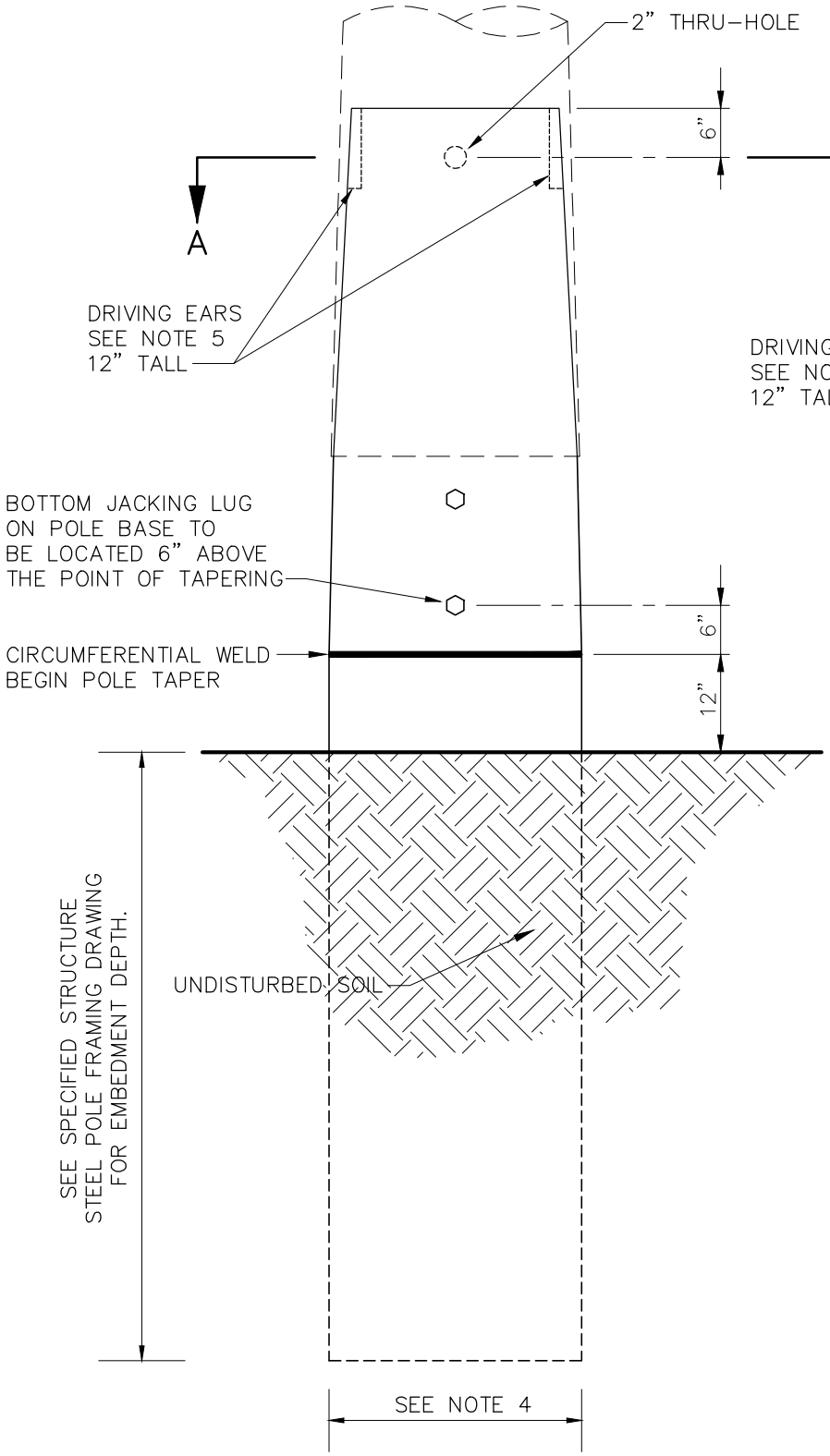
STEEL POLE FRAMING DRAWING
115 kV TRANSMISSION LINE
DICKINSON AVENUE TO FROG LEVEL ROAD R–2250 NCDOT RELOCATION
TP–5AA–S (IN HIGH, OUT LOW)

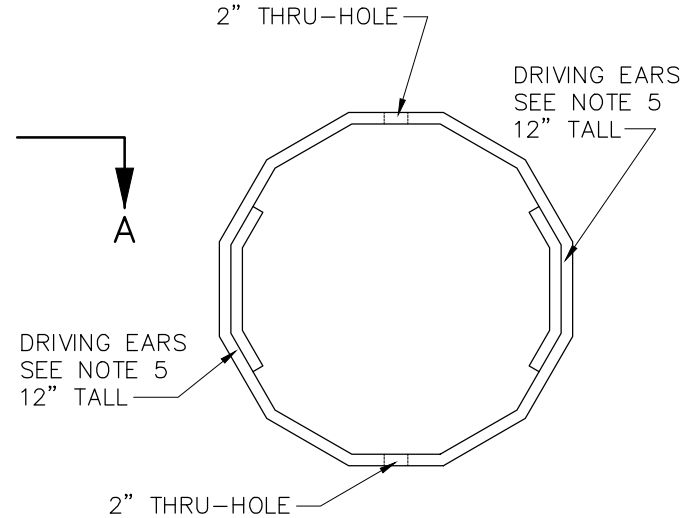
Booth & Associates, LLC
5811 Glenwood Avenue | Raleigh, NC 27612 CONSULTING ENGINEERS NC F-0221

DWN.	AAI	DATE:	04/18/17
CKD.	ARD	APPD.	RSY
SCALE:	NONE		15–8097

DATE	REVISION

DWG. NO.
SPFD–4
1 OF 1





SECTION A-A
N.T.S.

NOTES:

1) VIBRATORY POLE BASE TO BE INSTALLED USING VIBRATORY HAMMER. THE FREQUENCY AND STROKE AMPLITUDE RANGES FOR INSTALLATION OF THE POLE BASE TO BE PER MANUFACTURERS RECOMMENDATIONS.

2) TAPER OF POLE TO MATCH TAPER OF VIBRATORY POLE BASE.

3) OVERLAP LENGTH TO BE DETERMINED BY MANUFACTURER.

4) VIBRATORY BASE DIAMETERS SHOWN ON SPECIFIED STRUCTURE STEEL POLE FRAMING DRAWING ARE MINIMUM. POLE MANUFACTURER IS TO VERIFY VIBRATORY POLE BASE IS ADEQUATE FOR DESIGN LOADS.

5) MANUFACTURE SHALL DETERMINE ADEQUATE OF DRIVING EARS.

LIST OF MATERIALS

ITEM	QTY.	DESCRIPTION
	1	Vibratory Pole Base

GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

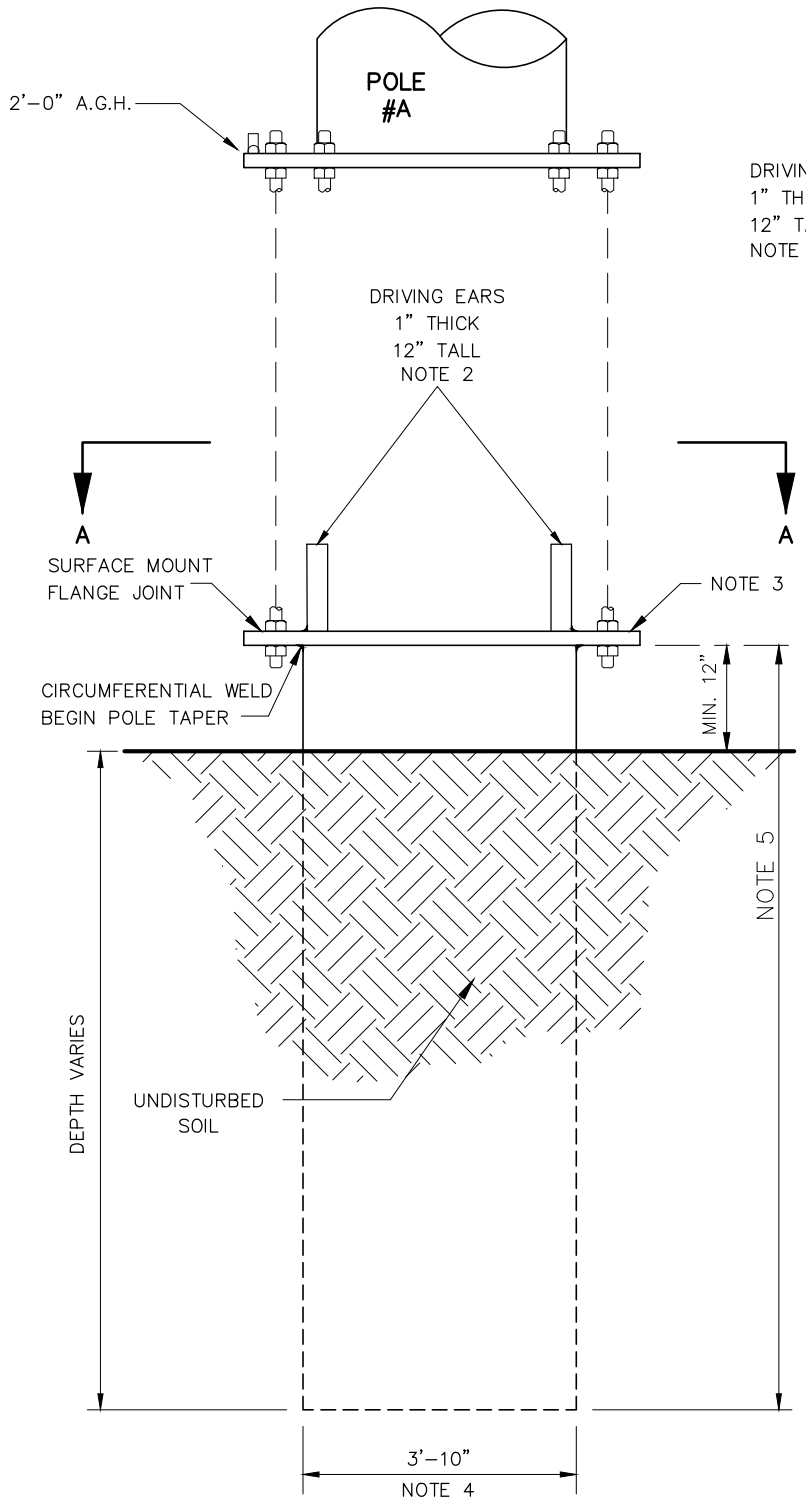
STEEL POLE FRAMING DRAWING
VIBRATORY DRIVEN POLE BASE
GUIDE ONLY

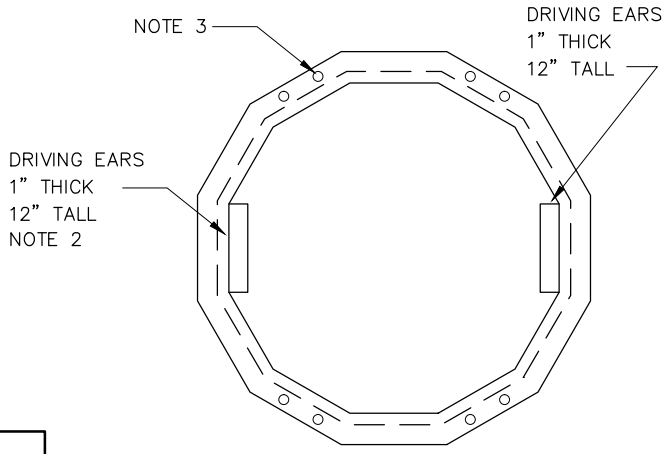
Booth & Associates, LLC
5811 Glenwood Avenue | Raleigh, NC 27612 CONSULTING ENGINEERS NC F-0221

DSN.	BCF	DWN.	AAI
CKD.	BCF	APPD.	WPJ
SCALE:	NONE	DATE:	06/17/16

DATE	REVISION

DWG. NO.
TMF-VPB





SECTION A-A

N.T.S.

NOTES:

1) VIBRATORY POLE BASE TO BE INSTALLED USING VIBRATORY HAMMER. THE FREQUENCY AND STROKE AMPLITUDE RANGES FOR INSTALLATION OF THE POLE BASE TO BE PER MANUFACTURERS RECOMMENDATIONS.

2) POLE MANUFACTURER TO DETERMINE APPROPRIATE DRIVING EARS FOR INSTALLATION. DIMENSIONS GIVEN ARE MINIMUM. POLE MANUFACTURER TO ENSURE SIZE AND CONNECTION OF DRIVING EARS WILL BE ADEQUATE FOR INSTALLATION BY VIBRATORY HAMMER.

3) FLANGE SIZE AND BOLT PATTERN TO BE DETERMINED BY MANUFACTURER. BOLT PATTERN OF POLE TO MATCH BOLT PATTERN OF FOUNDATION FLANGE JOINT.

4) VIBRATORY BASE DIAMETERS SHOWN ON SPECIFIED STRUCTURE STEEL POLE FRAMING DRAWINGS ARE MAXIMUM ALLOWABLE. POLE MANUFACTURER IS TO VERIFY VIBRATORY POLE BASE IS ADEQUATE FOR DESIGN LOADS.

5) CORROSION INHIBITING COATING FROM POLE ABOVE BASE BOTTOM TO BOTTOM OF FLANGE JOINT.

LIST OF MATERIALS

ITEM	QTY.	DESCRIPTION
	1	VIBRATORY POLE BASE – SURFACE MOUNT FLANGE TYPE

GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

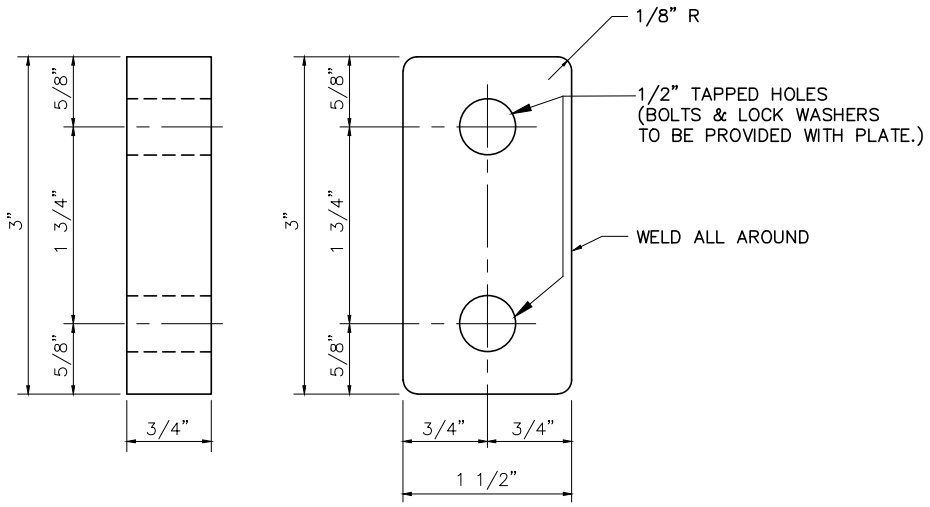
STEEL POLE FRAMING DRAWING
VIBRATORY DRIVEN POLE BASE-FLANGE TYPE
GUIDE ONLY

Booth & Associates, LLC
5811 Glenwood Avenue | Raleigh, NC 27612 CONSULTING ENGINEERS NC F-0221

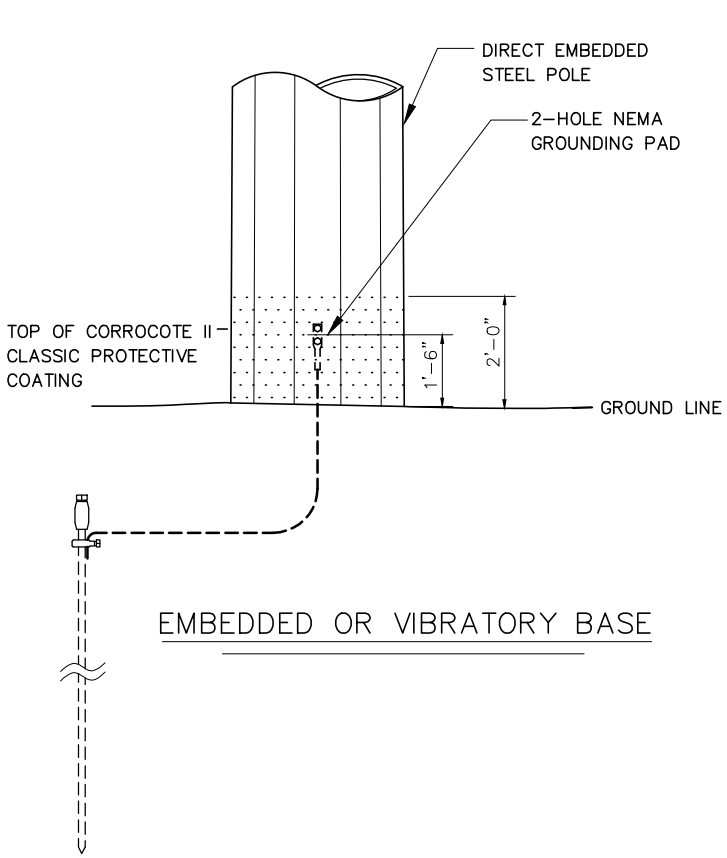
DSN.	ARD	DWN.	MJJ
CKD.	ARD	APPD.	RSY
SCALE:	NONE	DATE:	05/11/17

DATE	REVISION

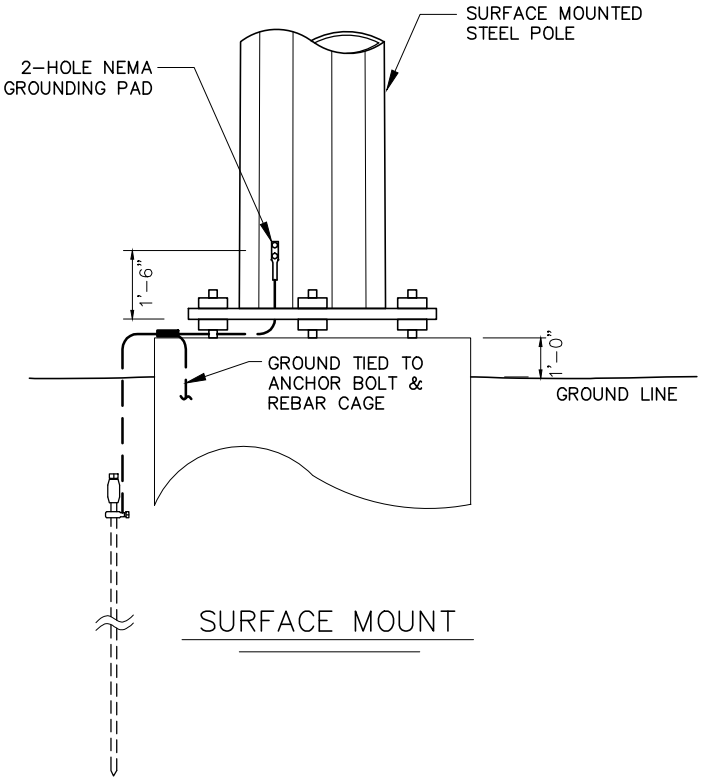
DWG. NO.
TMF-VPB-F-A



NEMA PAD DETAIL



EMBEDDED OR VIBRATORY BASE



SURFACE MOUNT

STEEL POLE GROUNDING PAD DETAIL

Booth & Associates, LLC
5811 Glenwood Avenue | Raleigh, NC 27612 CONSULTING ENGINEERS NC F-0221

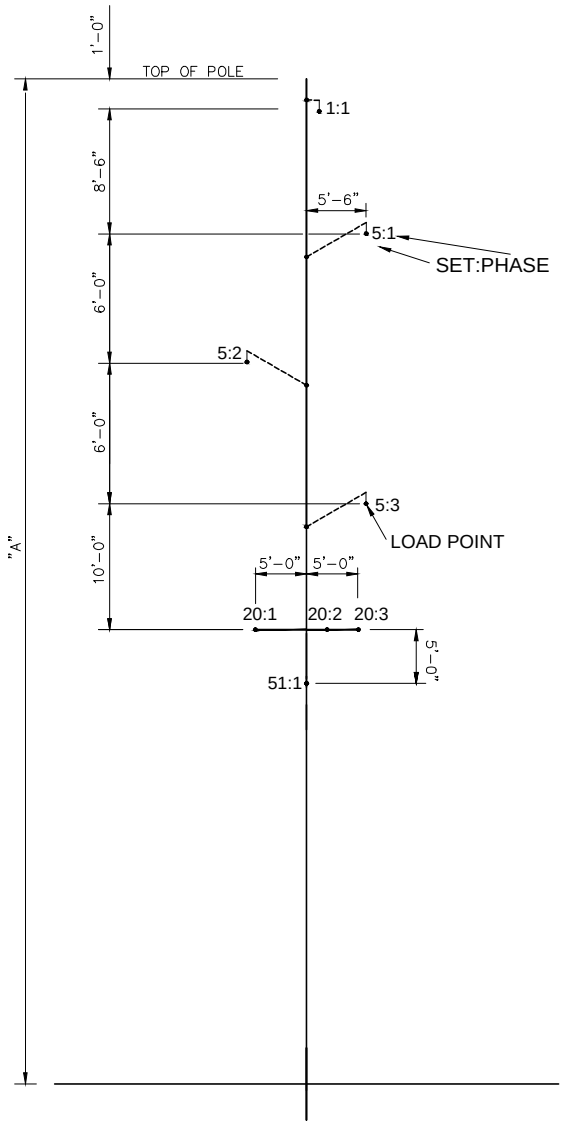
DSN.	BCF	DWN.	AAI
CKD.	BCF	APPD.	WPJ
SCALE:	NONE	DATE:	05/02/16

DATE	REVISION

DWG. NO.
TMS-5

ATTACHMENT B

DESIGN LOADS
(Loading Diagrams)



NOTES:

1. THE TRANSVERSE, VERTICAL, AND LONGITUDINAL LOADS FOR THE TRANSMISSION STRUCTURES WITH WHICH THIS CONFIGURATION APPLIES ARE LISTED IN TABLE LT AND CAN BE DISTINGUISHED BY THEIR RESPECTIVE SET AND PHASE NUMBER. THE POLE LENGTH, EMBEDMENT DEPTH, HEIGHT ("A") AND LINE ANGLE(S) (I.E. "Θ"$_1$, "Θ"$_2$) ARE ALSO IDENTIFIED IN THE TABLE.
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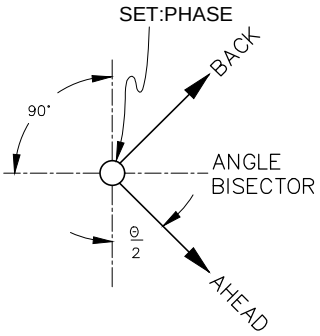
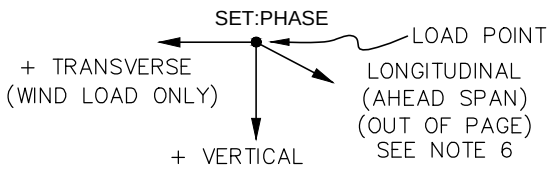
3. THE ORIENTATION OF THESE LOADS AT EACH SET:PHASE LOCATION IS DEFINED BY THE SET & PHASE DIAGRAM BELOW.
4. MINIMUM POLE TIP DIAMETER TO BE NO LESS THAN 10 INCHES.
5. FOR WIND DIRECTION AND LOCATION, REFER TO "LOAD TREE WIND LOADS AND DIRECTION".
6. LONGITUDINAL LOADS GIVEN SPECIFY THE MAGNITUDE OF WIRE TENSION IN EACH DIRECTION (AHEAD SPAN AND BACK SPAN).THE POLE MANUFACTURER IS RESPONSIBLE FOR DETERMINING THE TRANSVERSE TENSION LOAD AT EACH LOAD POINT.
7. Θ_1 REPRESENTS THE LINE ANGLE FOR THE TRANSMISSION CONDUCTOR AND Θ_2 REPRESENTS THE LINE ANGLE FOR THE DISTRIBUTION CONDUCTOR.

CONDUCTOR DESCRIPTION

SET	CONDUCTOR
1	OHGW – 7#9 ALUMOWELD
5	1272 kcmil 61/0 AAC – NARCISSUS
20,51	336.4 kcmil 18/1 ACSR – MERLIN



SET & PHASE DIAGRAM



GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

DICKINSON AVE TO FROG LEVEL RD
STRUCTURE LOADING DESCRIPTION
TP–115–S

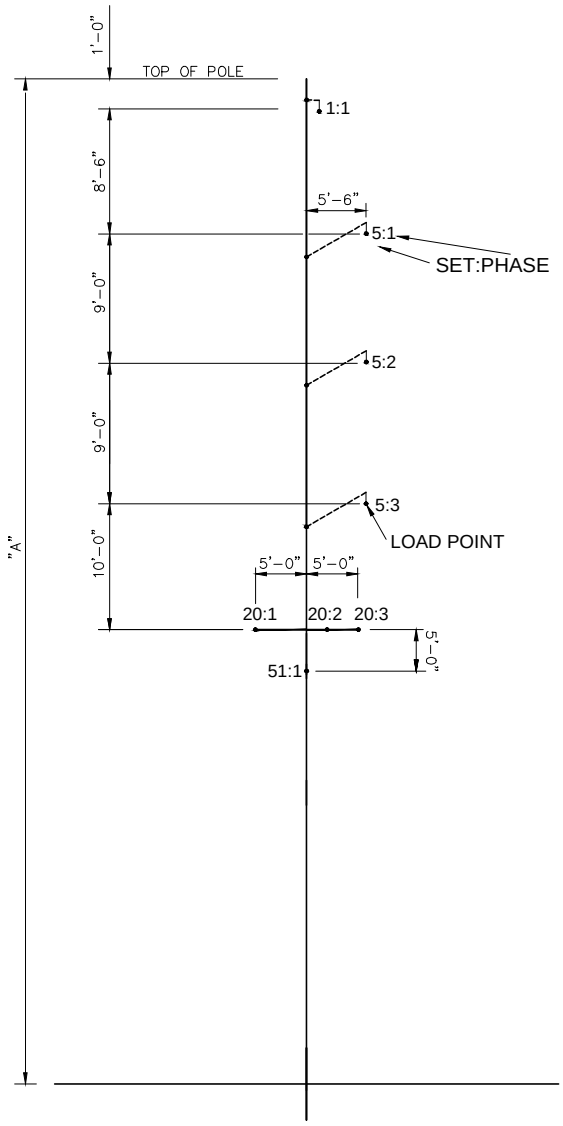
Booth & Associates, LLC
5811 Glenwood Avenue | Raleigh, NC 27612 CONSULTING ENGINEERS NC F-0221

DWN.	AAI	DATE:	04/18/17
CKD.	ARD	APPD.	RSY
SCALE:	NTS		15–8097

DATE	REVISION

DWG. No.
LT–1
SHEET 1 OF 1

1408097LTD–T (ID 51546)



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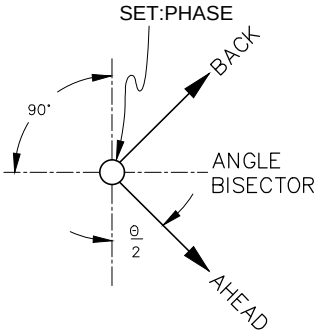
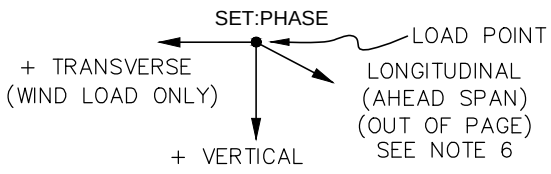
7. Θ_1 REPRESENTS THE LINE ANGLE FOR THE TRANSMISSION CONDUCTOR AND Θ_2 REPRESENTS THE LINE ANGLE FOR THE DISTRIBUTION CONDUCTOR.

CONDUCTOR DESCRIPTION

SET	CONDUCTOR
1	OHGW – 7#9 ALUMOWELD
5	1272 kcmil 61/0 AAC – NARCISSUS
20,51	336.4 kcmil 18/1 ACSR – MERLIN



SET & PHASE DIAGRAM



GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

DICKINSON AVE TO FROG LEVEL RD.
STRUCTURE LOADING DESCRIPTION
TS–5AA–S

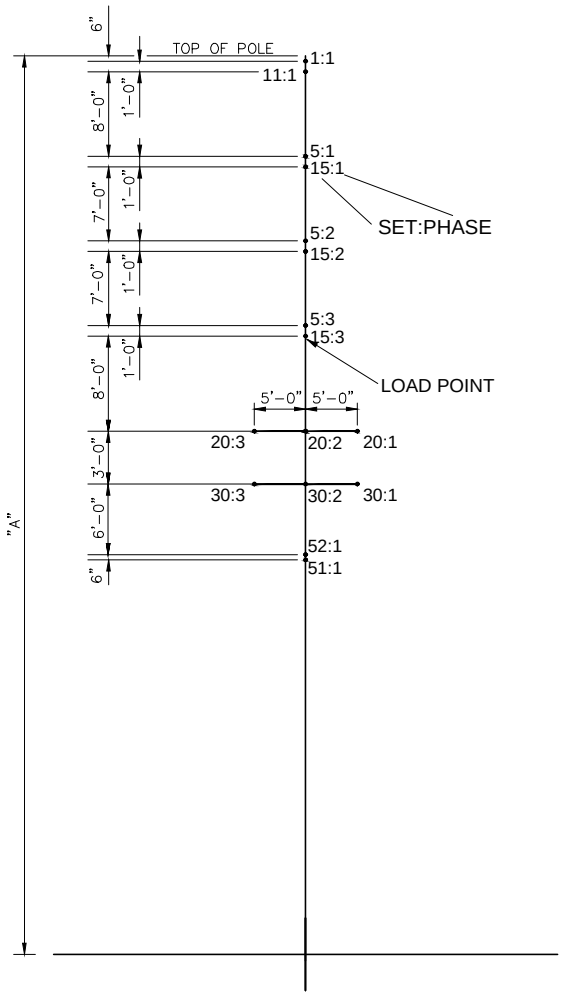
Booth & Associates, LLC
5811 Glenwood Avenue | Raleigh, NC 27612 CONSULTING ENGINEERS NC F-0221

DWN.	AAI	DATE:	04/18/17
CKD.	ARD	APPD.	RSY
SCALE:	NTS		15–8097

DATE	REVISION

DWG. No.
LT–2
SHEET 1 OF 1

1408097LTD–T (ID 51546)



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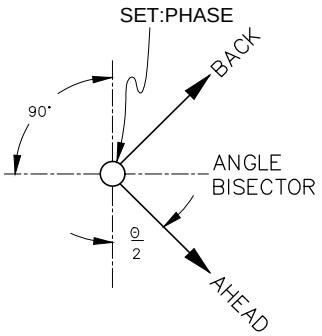
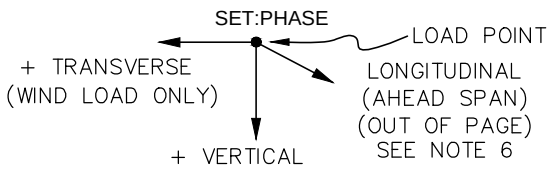


CONDUCTOR DESCRIPTION

SET	CONDUCTOR
1,11	OHGW – 7#9 ALUMOWELD
5,15	1272 kcmil 61/0 AAC – NARCISSUS
20,30,51,52	336.4 kcmil 18/1 ACSR – MERLIN

SET & PHASE DIAGRAM



GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

DICKINSON AVE TO FROG LEVEL RD.
STRUCTURE LOADING DESCRIPTION
TS–5AA–S (IN HIGH, OUT LOW)

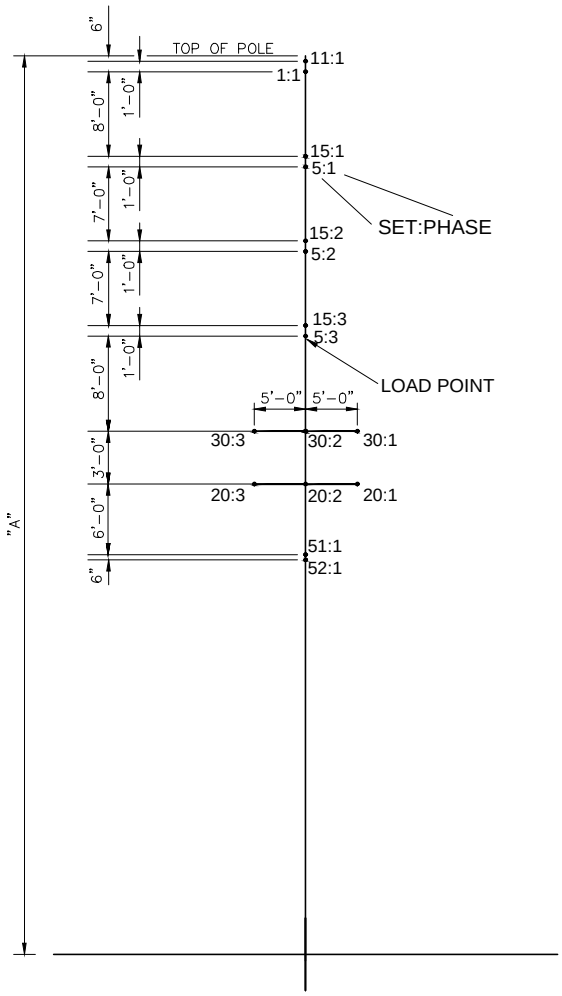
Booth & Associates, LLC
5811 Glenwood Avenue | Raleigh, NC 27612 CONSULTING ENGINEERS NC F-0221

DWN.	AAI	DATE:	04/18/17
CKD.	ARD	APPD.	RSY
SCALE:	NTS	15–8097	

DATE	REVISION

DWG. No.
LT–3
SHEET 1 OF 1

1408097LTD–T (ID 51546)



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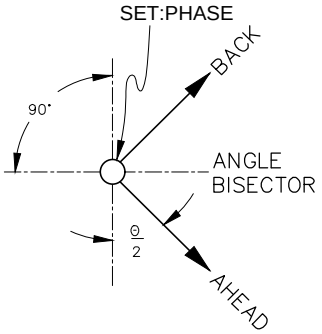
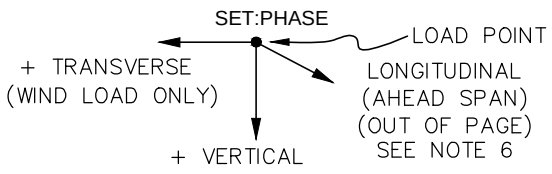


CONDUCTOR DESCRIPTION

SET	CONDUCTOR
1,11	OHGW – 7#9 ALUMOWELD
5,15	1272 kcmil 61/0 AAC – NARCISSUS
20,30,51,52	336.4 kcmil 18/1 ACSR – MERLIN

SET & PHASE DIAGRAM



GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

DICKINSON AVE TO FROG LEVEL RD.
STRUCTURE LOADING DESCRIPTION
TS–5AA–S (IN LOW, OUT HIGH)

Booth & Associates, LLC
5811 Glenwood Avenue | Raleigh, NC 27612 CONSULTING ENGINEERS NC F-0221

DWN.	AAI	DATE:	04/18/17
CKD.	ARD	APPD.	RSY
SCALE:	NTS	15–8097	

DATE	REVISION

DWG. No.
LT–4
SHEET 1 OF 1

1408097LTD–T (ID 51546)

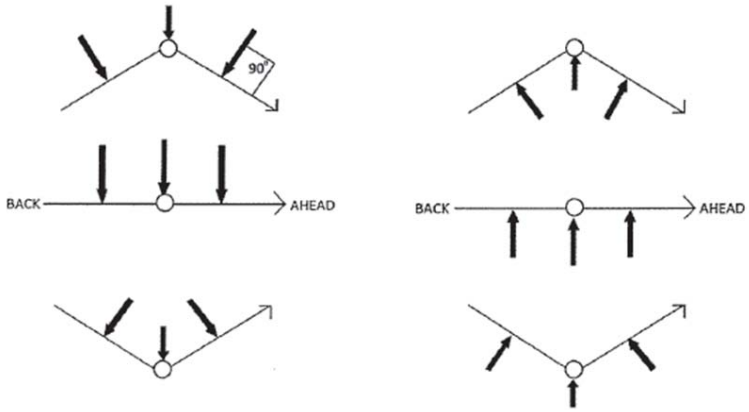
Load Tree Table

March 30, 2017

Load Tree No.	Str. No.	Pole Length (ft)	Dim. "A" (ft)	Embedment Depth (ft)	Line Angle "θ_1"	Line Angle "θ_2"
LT-1	2	75.0	75.0	*	24°56'12" LT	
LT-2	3	75.0	75.0	*	25°25'35" LT	
LT-3	14	70.0	70.0	*	24°43'41" LT	

* Surface Mounted

Wind Direction



NORMAL ALL + (NA+)

NORMAL ALL - (NA-)

There are two (2) wind situations applicaple to the load cases shown in the table above, NA+ and NA-. The arrows in the diagram above represent the wind direction, and the loads in the table above represent the psf load applied to the structure and spans. The wind blows perpendicular to each span individually, and on the structure at the angle bisector.

LC #	WC #	Load Case Description	Set No.	Phase No.	Attach. Joint Labels	Structure Loads			Loads from back span			Loads from ahead span		
						Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)
7	1	NESC MEDIUM NA+ (250B)	1	1	S1	122	-465	2591	122	-465	2591	0	0	0
7	1	NESC MEDIUM NA+ (250B)	5	1	C1	521	-2436	11275	521	-2436	11275	0	0	0
7	1	NESC MEDIUM NA+ (250B)	5	2	C2	461	-2074	11348	461	-2074	11348	0	0	0
7	1	NESC MEDIUM NA+ (250B)	5	3	C3	400	-2440	11275	400	-2440	11275	0	0	0
7	1	NESC MEDIUM NA+ (250B)	11	1	S11	82	-483	-2591	0	0	0	82	-483	-2591
7	1	NESC MEDIUM NA+ (250B)	15	1	C11	358	-2304	-11297	0	0	0	358	-2304	-11297
7	1	NESC MEDIUM NA+ (250B)	15	2	C22	358	-2304	-11297	0	0	0	358	-2304	-11297
7	1	NESC MEDIUM NA+ (250B)	15	3	C33	357	-2304	-11297	0	0	0	357	-2304	-11297
7	1	NESC MEDIUM NA+ (250B)	20	1	D1	152	-645	3647	152	-645	3647	0	0	0
7	1	NESC MEDIUM NA+ (250B)	20	2	D2	151	-675	3641	151	-675	3641	0	0	0
7	1	NESC MEDIUM NA+ (250B)	20	3	D3	152	-645	3647	152	-645	3647	0	0	0
7	1	NESC MEDIUM NA+ (250B)	30	1	D11	139	-677	-3644	0	0	0	139	-677	-3644
7	1	NESC MEDIUM NA+ (250B)	30	2	D22	137	-680	-3643	0	0	0	137	-680	-3643
7	1	NESC MEDIUM NA+ (250B)	30	3	D33	139	-678	-3644	0	0	0	139	-678	-3644
7	1	NESC MEDIUM NA+ (250B)	51	1	N1	137	-679	-3641	0	0	0	137	-679	-3641
7	1	NESC MEDIUM NA+ (250B)	52	1	N11	141	-660	3641	141	-660	3641	0	0	0
8	1	NESC MEDIUM NA- (250B)	1	1	S1	122	-681	2543	122	-681	2543	0	0	0
8	1	NESC MEDIUM NA- (250B)	5	1	C1	521	-2902	11167	521	-2902	11167	0	0	0
8	1	NESC MEDIUM NA- (250B)	5	2	C2	461	-2543	11254	461	-2543	11254	0	0	0
8	1	NESC MEDIUM NA- (250B)	5	3	C3	400	-2906	11166	400	-2906	11166	0	0	0
8	1	NESC MEDIUM NA- (250B)	11	1	S11	82	-654	-2554	0	0	0	82	-654	-2554
8	1	NESC MEDIUM NA- (250B)	15	1	C11	358	-2674	-11217	0	0	0	358	-2674	-11217
8	1	NESC MEDIUM NA- (250B)	15	2	C22	358	-2674	-11217	0	0	0	358	-2674	-11217
8	1	NESC MEDIUM NA- (250B)	15	3	C33	357	-2674	-11217	0	0	0	357	-2674	-11217
8	1	NESC MEDIUM NA- (250B)	20	1	D1	152	-953	3580	152	-953	3580	0	0	0
8	1	NESC MEDIUM NA- (250B)	20	2	D2	151	-980	3572	151	-980	3572	0	0	0
8	1	NESC MEDIUM NA- (250B)	20	3	D3	152	-953	3580	152	-953	3580	0	0	0
8	1	NESC MEDIUM NA- (250B)	30	1	D11	139	-922	-3591	0	0	0	139	-922	-3591
8	1	NESC MEDIUM NA- (250B)	30	2	D22	137	-920	-3591	0	0	0	137	-920	-3591
8	1	NESC MEDIUM NA- (250B)	30	3	D33	139	-922	-3591	0	0	0	139	-922	-3591
8	1	NESC MEDIUM NA- (250B)	51	1	N1	137	-919	-3589	0	0	0	137	-919	-3589
8	1	NESC MEDIUM NA- (250B)	52	1	N11	141	-965	3574	141	-965	3574	0	0	0
9	4	CONCURRENT ICE/WIND NA+ (250D)	1	1	S1	252	-493	2488	252	-493	2488	0	0	0
9	4	CONCURRENT ICE/WIND NA+ (250D)	5	1	C1	653	-2010	8854	653	-2010	8854	0	0	0
9	4	CONCURRENT ICE/WIND NA+ (250D)	5	2	C2	595	-1726	8914	595	-1726	8914	0	0	0
9	4	CONCURRENT ICE/WIND NA+ (250D)	5	3	C3	537	-2013	8853	537	-2013	8853	0	0	0
9	4	CONCURRENT ICE/WIND NA+ (250D)	11	1	S11	177	-475	-2372	0	0	0	177	-475	-2372
9	4	CONCURRENT ICE/WIND NA+ (250D)	15	1	C11	462	-1821	-8577	0	0	0	462	-1821	-8577
9	4	CONCURRENT ICE/WIND NA+ (250D)	15	2	C22	462	-1821	-8577	0	0	0	462	-1821	-8577
9	4	CONCURRENT ICE/WIND NA+ (250D)	15	3	C33	461	-1821	-8577	0	0	0	461	-1821	-8577
9	4	CONCURRENT ICE/WIND NA+ (250D)	20	1	D1	287	-679	3410	287	-679	3410	0	0	0
9	4	CONCURRENT ICE/WIND NA+ (250D)	20	2	D2	285	-707	3404	285	-707	3404	0	0	0
9	4	CONCURRENT ICE/WIND NA+ (250D)	20	3	D3	287	-679	3410	287	-679	3410	0	0	0
9	4	CONCURRENT ICE/WIND NA+ (250D)	30	1	D11	250	-662	-3261	0	0	0	250	-662	-3261
9	4	CONCURRENT ICE/WIND NA+ (250D)	30	2	D22	246	-662	-3261	0	0	0	246	-662	-3261
9	4	CONCURRENT ICE/WIND NA+ (250D)	30	3	D33	250	-662	-3261	0	0	0	250	-662	-3261
9	4	CONCURRENT ICE/WIND NA+ (250D)	51	1	N1	246	-660	-3248	0	0	0	246	-660	-3248
9	4	CONCURRENT ICE/WIND NA+ (250D)	52	1	N11	272	-692	3402	272	-692	3402	0	0	0
10	4	CONCURRENT ICE/WIND NA- (250D)	1	1	S1	252	-612	2461	252	-612	2461	0	0	0
10	4	CONCURRENT ICE/WIND NA- (250D)	5	1	C1	653	-2192	8811	653	-2192	8811	0	0	0
10	4	CONCURRENT ICE/WIND NA- (250D)	5	2	C2	595	-1909	8877	595	-1909	8877	0	0	0
10	4	CONCURRENT ICE/WIND NA- (250D)	5	3	C3	537	-2195	8810	537	-2195	8810	0	0	0
10	4	CONCURRENT ICE/WIND NA- (250D)	11	1	S11	177	-569	-2351	0	0	0	177	-569	-2351
10	4	CONCURRENT ICE/WIND NA- (250D)	15	1	C11	462	-1965	-8546	0	0	0	462	-1965	-8546
10	4	CONCURRENT ICE/WIND NA- (250D)	15	2	C22	462	-1965	-8546	0	0	0	462	-1965	-8546
10	4	CONCURRENT ICE/WIND NA- (250D)	15	3	C33	461	-1965	-8546	0	0	0	461	-1965	-8546
10	4	CONCURRENT ICE/WIND NA- (250D)	20	1	D1	287	-822	3378	287	-822	3378	0	0	0
10	4	CONCURRENT ICE/WIND NA- (250D)	20	2	D2	285	-848	3372	285	-848	3372	0	0	0
10	4	CONCURRENT ICE/WIND NA- (250D)	20	3	D3	287	-822	3378	287	-822	3378	0	0	0
10	4	CONCURRENT ICE/WIND NA- (250D)	30	1	D11	250	-775	-3236	0	0	0	250	-775	-3236
10	4	CONCURRENT ICE/WIND NA- (250D)	30	2	D22	246	-774	-3236	0	0	0	246	-774	-3236
10	4	CONCURRENT ICE/WIND NA- (250D)	30	3	D33	250	-775	-3236	0	0	0	250	-775	-3236
10	4	CONCURRENT ICE/WIND NA- (250D)	51	1	N1	246	-771	-3224	0	0	0	246	-771	-3224
10	4	CONCURRENT ICE/WIND NA- (250D)	52	1	N11	272	-833	3371	272	-833	3371	0	0	0

LC #	WC #	Load Case Description	Set No.	Phase No.	Attach. Joint Labels	Structure Loads			Loads from back span			Loads from ahead span		
						Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)
11	3	EXTREME WIND NA+ (250C)	1	1	S1	65	-245	1749	65	-245	1749	0	0	0
11	3	EXTREME WIND NA+ (250C)	5	1	C1	305	-1195	7326	305	-1195	7326	0	0	0
11	3	EXTREME WIND NA+ (250C)	5	2	C2	258	-969	7359	258	-969	7359	0	0	0
11	3	EXTREME WIND NA+ (250C)	5	3	C3	210	-1217	7321	210	-1217	7321	0	0	0
11	3	EXTREME WIND NA+ (250C)	11	1	S11	37	-256	-1698	0	0	0	37	-256	-1698
11	3	EXTREME WIND NA+ (250C)	15	1	C11	198	-1080	-6905	0	0	0	198	-1080	-6905
11	3	EXTREME WIND NA+ (250C)	15	2	C22	197	-1088	-6903	0	0	0	197	-1088	-6903
11	3	EXTREME WIND NA+ (250C)	15	3	C33	197	-1097	-6901	0	0	0	197	-1097	-6901
11	3	EXTREME WIND NA+ (250C)	20	1	D1	58	-342	2756	58	-342	2756	0	0	0
11	3	EXTREME WIND NA+ (250C)	20	2	D2	57	-366	2753	57	-366	2753	0	0	0
11	3	EXTREME WIND NA+ (250C)	20	3	D3	58	-342	2756	58	-342	2756	0	0	0
11	3	EXTREME WIND NA+ (250C)	30	1	D11	64	-361	-2631	0	0	0	64	-361	-2631
11	3	EXTREME WIND NA+ (250C)	30	2	D22	63	-365	-2630	0	0	0	63	-365	-2630
11	3	EXTREME WIND NA+ (250C)	30	3	D33	64	-361	-2631	0	0	0	64	-361	-2631
11	3	EXTREME WIND NA+ (250C)	51	1	N1	63	-357	-2561	0	0	0	63	-357	-2561
11	3	EXTREME WIND NA+ (250C)	52	1	N11	48	-351	2703	48	-351	2703	0	0	0
12	3	EXTREME WIND NA- (250C)	1	1	S1	65	-523	1689	65	-523	1689	0	0	0
12	3	EXTREME WIND NA- (250C)	5	1	C1	305	-2234	7088	305	-2234	7088	0	0	0
12	3	EXTREME WIND NA- (250C)	5	2	C2	258	-1996	7157	258	-1996	7157	0	0	0
12	3	EXTREME WIND NA- (250C)	5	3	C3	210	-2217	7092	210	-2217	7092	0	0	0
12	3	EXTREME WIND NA- (250C)	11	1	S11	37	-484	-1649	0	0	0	37	-484	-1649
12	3	EXTREME WIND NA- (250C)	15	1	C11	198	-1934	-6725	0	0	0	198	-1934	-6725
12	3	EXTREME WIND NA- (250C)	15	2	C22	197	-1925	-6727	0	0	0	197	-1925	-6727
12	3	EXTREME WIND NA- (250C)	15	3	C33	197	-1916	-6729	0	0	0	197	-1916	-6729
12	3	EXTREME WIND NA- (250C)	20	1	D1	58	-852	2647	58	-852	2647	0	0	0
12	3	EXTREME WIND NA- (250C)	20	2	D2	57	-872	2640	57	-872	2640	0	0	0
12	3	EXTREME WIND NA- (250C)	20	3	D3	58	-852	2647	58	-852	2647	0	0	0
12	3	EXTREME WIND NA- (250C)	30	1	D11	64	-782	-2541	0	0	0	64	-782	-2541
12	3	EXTREME WIND NA- (250C)	30	2	D22	63	-779	-2542	0	0	0	63	-779	-2542
12	3	EXTREME WIND NA- (250C)	30	3	D33	64	-782	-2541	0	0	0	64	-782	-2541
12	3	EXTREME WIND NA- (250C)	51	1	N1	63	-756	-2476	0	0	0	63	-756	-2476
12	3	EXTREME WIND NA- (250C)	52	1	N11	48	-842	2596	48	-842	2596	0	0	0
13	6	EXTREME ICE	1	1	S1	227	-475	2126	227	-475	2126	0	0	0
13	6	EXTREME ICE	5	1	C1	586	-1752	7367	586	-1752	7367	0	0	0
13	6	EXTREME ICE	5	2	C2	537	-1516	7419	537	-1516	7419	0	0	0
13	6	EXTREME ICE	5	3	C3	489	-1755	7366	489	-1755	7366	0	0	0
13	6	EXTREME ICE	11	1	S11	161	-446	-2018	0	0	0	161	-446	-2018
13	6	EXTREME ICE	15	1	C11	418	-1559	-7052	0	0	0	418	-1559	-7052
13	6	EXTREME ICE	15	2	C22	417	-1559	-7052	0	0	0	417	-1559	-7052
13	6	EXTREME ICE	15	3	C33	417	-1559	-7052	0	0	0	417	-1559	-7052
13	6	EXTREME ICE	20	1	D1	262	-639	2888	262	-639	2888	0	0	0
13	6	EXTREME ICE	20	2	D2	260	-662	2883	260	-662	2883	0	0	0
13	6	EXTREME ICE	20	3	D3	262	-639	2888	262	-639	2888	0	0	0
13	6	EXTREME ICE	30	1	D11	227	-606	-2739	0	0	0	227	-606	-2739
13	6	EXTREME ICE	30	2	D22	223	-606	-2739	0	0	0	223	-606	-2739
13	6	EXTREME ICE	30	3	D33	227	-606	-2739	0	0	0	227	-606	-2739
13	6	EXTREME ICE	51	1	N1	223	-603	-2727	0	0	0	223	-603	-2727
13	6	EXTREME ICE	52	1	N11	249	-649	2881	249	-649	2881	0	0	0
14	9	UPLIFT	1	1	S1	50	-212	950	50	-212	950	0	0	0
14	9	UPLIFT	5	1	C1	280	-1618	6802	280	-1618	6802	0	0	0
14	9	UPLIFT	5	2	C2	235	-1400	6850	235	-1400	6850	0	0	0
14	9	UPLIFT	5	3	C3	191	-1620	6802	191	-1620	6802	0	0	0
14	9	UPLIFT	11	1	S11	32	-254	-1150	0	0	0	32	-254	-1150
14	9	UPLIFT	15	1	C11	183	-1574	-7119	0	0	0	183	-1574	-7119
14	9	UPLIFT	15	2	C22	182	-1574	-7119	0	0	0	182	-1574	-7119
14	9	UPLIFT	15	3	C33	182	-1574	-7119	0	0	0	182	-1574	-7119
14	9	UPLIFT	20	1	D1	56	-335	1517	56	-335	1517	0	0	0
14	9	UPLIFT	20	2	D2	56	-347	1514	56	-347	1514	0	0	0
14	9	UPLIFT	20	3	D3	56	-335	1517	56	-335	1517	0	0	0
14	9	UPLIFT	30	1	D11	56	-394	-1779	0	0	0	56	-394	-1779
14	9	UPLIFT	30	2	D22	56	-393	-1779	0	0	0	56	-393	-1779
14	9	UPLIFT	30	3	D33	56	-394	-1779	0	0	0	56	-394	-1779
14	9	UPLIFT	51	1	N1	56	-396	-1793	0	0	0	56	-396	-1793
14	9	UPLIFT	52	1	N11	50	-342	1517	50	-342	1517	0	0	0

LC #	WC #	Load Case Description	Set No.	Phase No.	Attach. Joint Labels	Structure Loads			Loads from back span			Loads from ahead span		
						Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)
15	28	CAMBER	1	1	S1	45	-141	632	45	-141	632	0	0	0
15	28	CAMBER	5	1	C1	245	-914	3843	245	-914	3843	0	0	0
15	28	CAMBER	5	2	C2	219	-791	3870	219	-791	3870	0	0	0
15	28	CAMBER	5	3	C3	194	-915	3842	194	-915	3842	0	0	0
15	28	CAMBER	11	1	S11	31	-156	-705	0	0	0	31	-156	-705
15	28	CAMBER	15	1	C11	172	-842	-3806	0	0	0	172	-842	-3806
15	28	CAMBER	15	2	C22	171	-842	-3806	0	0	0	171	-842	-3806
15	28	CAMBER	15	3	C33	171	-841	-3806	0	0	0	171	-841	-3806
15	28	CAMBER	20	1	D1	59	-191	865	59	-191	865	0	0	0
15	28	CAMBER	20	2	D2	59	-198	863	59	-198	863	0	0	0
15	28	CAMBER	20	3	D3	59	-191	865	59	-191	865	0	0	0
15	28	CAMBER	30	1	D11	54	-195	-880	0	0	0	54	-195	-880
15	28	CAMBER	30	2	D22	53	-194	-880	0	0	0	53	-194	-880
15	28	CAMBER	30	3	D33	54	-195	-880	0	0	0	54	-195	-880
15	28	CAMBER	51	1	N1	53	-195	-881	0	0	0	53	-195	-881
15	28	CAMBER	52	1	N11	55	-194	863	55	-194	863	0	0	0
16	8	BLOWOUT DEFLECTION NA+	1	1	S1	47	-140	753	47	-140	753	0	0	0
16	8	BLOWOUT DEFLECTION NA+	5	1	C1	248	-875	4130	248	-875	4130	0	0	0
16	8	BLOWOUT DEFLECTION NA+	5	2	C2	221	-742	4156	221	-742	4156	0	0	0
16	8	BLOWOUT DEFLECTION NA+	5	3	C3	194	-876	4129	194	-876	4129	0	0	0
16	8	BLOWOUT DEFLECTION NA+	11	1	S11	31	-156	-804	0	0	0	31	-156	-804
16	8	BLOWOUT DEFLECTION NA+	15	1	C11	172	-809	-4042	0	0	0	172	-809	-4042
16	8	BLOWOUT DEFLECTION NA+	15	2	C22	172	-809	-4042	0	0	0	172	-809	-4042
16	8	BLOWOUT DEFLECTION NA+	15	3	C33	172	-809	-4042	0	0	0	172	-809	-4042
16	8	BLOWOUT DEFLECTION NA+	20	1	D1	58	-190	1116	58	-190	1116	0	0	0
16	8	BLOWOUT DEFLECTION NA+	20	2	D2	58	-200	1114	58	-200	1114	0	0	0
16	8	BLOWOUT DEFLECTION NA+	20	3	D3	58	-190	1116	58	-190	1116	0	0	0
16	8	BLOWOUT DEFLECTION NA+	30	1	D11	54	-199	-1104	0	0	0	54	-199	-1104
16	8	BLOWOUT DEFLECTION NA+	30	2	D22	53	-200	-1104	0	0	0	53	-200	-1104
16	8	BLOWOUT DEFLECTION NA+	30	3	D33	54	-199	-1104	0	0	0	54	-199	-1104
16	8	BLOWOUT DEFLECTION NA+	51	1	N1	53	-200	-1103	0	0	0	53	-200	-1103
16	8	BLOWOUT DEFLECTION NA+	52	1	N11	53	-195	1113	53	-195	1113	0	0	0
17	8	BLOWOUT DEFLECTION NA-	1	1	S1	47	-194	741	47	-194	741	0	0	0
17	8	BLOWOUT DEFLECTION NA-	5	1	C1	248	-1079	4083	248	-1079	4083	0	0	0
17	8	BLOWOUT DEFLECTION NA-	5	2	C2	221	-947	4115	221	-947	4115	0	0	0
17	8	BLOWOUT DEFLECTION NA-	5	3	C3	194	-1080	4082	194	-1080	4082	0	0	0
17	8	BLOWOUT DEFLECTION NA-	11	1	S11	31	-198	-795	0	0	0	31	-198	-795
17	8	BLOWOUT DEFLECTION NA-	15	1	C11	172	-971	-4007	0	0	0	172	-971	-4007
17	8	BLOWOUT DEFLECTION NA-	15	2	C22	172	-971	-4008	0	0	0	172	-971	-4008
17	8	BLOWOUT DEFLECTION NA-	15	3	C33	172	-971	-4008	0	0	0	172	-971	-4008
17	8	BLOWOUT DEFLECTION NA-	20	1	D1	58	-298	1093	58	-298	1093	0	0	0
17	8	BLOWOUT DEFLECTION NA-	20	2	D2	58	-306	1090	58	-306	1090	0	0	0
17	8	BLOWOUT DEFLECTION NA-	20	3	D3	58	-298	1093	58	-298	1093	0	0	0
17	8	BLOWOUT DEFLECTION NA-	30	1	D11	54	-285	-1086	0	0	0	54	-285	-1086
17	8	BLOWOUT DEFLECTION NA-	30	2	D22	53	-284	-1086	0	0	0	53	-284	-1086
17	8	BLOWOUT DEFLECTION NA-	30	3	D33	54	-285	-1086	0	0	0	54	-285	-1086
17	8	BLOWOUT DEFLECTION NA-	51	1	N1	53	-284	-1085	0	0	0	53	-284	-1085
17	8	BLOWOUT DEFLECTION NA-	52	1	N11	53	-301	1090	53	-301	1090	0	0	0
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	11	1	S11	55	-311	-1567	0	0	0	55	-311	-1567
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	15	1	C11	239	-1434	-6838	0	0	0	239	-1434	-6838
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	15	2	C22	238	-1434	-6838	0	0	0	238	-1434	-6838
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	15	3	C33	238	-1435	-6838	0	0	0	238	-1435	-6838
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	20	1	D1	101	-423	2203	101	-423	2203	0	0	0
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	20	2	D2	100	-441	2200	100	-441	2200	0	0	0
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	20	3	D3	101	-423	2203	101	-423	2203	0	0	0
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	30	1	D11	93	-436	-2203	0	0	0	93	-436	-2203
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	30	2	D22	91	-437	-2203	0	0	0	91	-437	-2203
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	30	3	D33	93	-436	-2203	0	0	0	93	-436	-2203
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	51	1	N1	91	-436	-2201	0	0	0	91	-436	-2201
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	52	1	N11	94	-431	2200	94	-431	2200	0	0	0
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	11	1	S11	55	-379	-1552	0	0	0	55	-379	-1552
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	15	1	C11	239	-1583	-6807	0	0	0	239	-1583	-6807
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	15	2	C22	238	-1582	-6807	0	0	0	238	-1582	-6807
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	15	3	C33	238	-1582	-6807	0	0	0	238	-1582	-6807

LC #	WC #	Load Case Description	Set No.	Phase No.	Attach. Joint Labels	Structure Loads			Loads from back span			Loads from ahead span		
						Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	20	1	D1	101	-546	2177	101	-546	2177	0	0	0
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	20	2	D2	100	-563	2172	100	-563	2172	0	0	0
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	20	3	D3	101	-546	2177	101	-546	2177	0	0	0
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	30	1	D11	93	-534	-2182	0	0	0	93	-534	-2182
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	30	2	D22	91	-533	-2182	0	0	0	91	-533	-2182
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	30	3	D33	93	-534	-2182	0	0	0	93	-534	-2182
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	51	1	N1	91	-532	-2180	0	0	0	91	-532	-2180
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	52	1	N11	94	-553	2173	94	-553	2173	0	0	0
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	11	1	S11	34	-233	-1543	0	0	0	34	-233	-1543
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	15	1	C11	180	-982	-6277	0	0	0	180	-982	-6277
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	15	2	C22	179	-989	-6276	0	0	0	179	-989	-6276
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	15	3	C33	179	-998	-6274	0	0	0	179	-998	-6274
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	20	1	D1	53	-311	2506	53	-311	2506	0	0	0
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	20	2	D2	52	-333	2503	52	-333	2503	0	0	0
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	20	3	D3	53	-311	2506	53	-311	2506	0	0	0
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	30	1	D11	58	-328	-2392	0	0	0	58	-328	-2392
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	30	2	D22	58	-331	-2391	0	0	0	58	-331	-2391
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	30	3	D33	58	-328	-2392	0	0	0	58	-328	-2392
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	51	1	N1	57	-325	-2328	0	0	0	57	-325	-2328
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	52	1	N11	43	-319	2457	43	-319	2457	0	0	0
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	11	1	S11	34	-440	-1499	0	0	0	34	-440	-1499
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	15	1	C11	180	-1758	-6114	0	0	0	180	-1758	-6114
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	15	2	C22	179	-1750	-6115	0	0	0	179	-1750	-6115
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	15	3	C33	179	-1742	-6117	0	0	0	179	-1742	-6117
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	20	1	D1	53	-775	2406	53	-775	2406	0	0	0
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	20	2	D2	52	-792	2400	52	-792	2400	0	0	0
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	20	3	D3	53	-775	2406	53	-775	2406	0	0	0
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	30	1	D11	58	-711	-2310	0	0	0	58	-711	-2310
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	30	2	D22	58	-708	-2311	0	0	0	58	-708	-2311
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	30	3	D33	58	-711	-2310	0	0	0	58	-711	-2310
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	51	1	N1	57	-688	-2251	0	0	0	57	-688	-2251
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	52	1	N11	43	-766	2360	43	-766	2360	0	0	0
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	11	1	S11	161	-432	-2156	0	0	0	161	-432	-2156
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	15	1	C11	420	-1655	-7797	0	0	0	420	-1655	-7797
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	15	2	C22	420	-1655	-7797	0	0	0	420	-1655	-7797
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	15	3	C33	419	-1655	-7797	0	0	0	419	-1655	-7797
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	20	1	D1	261	-617	3100	261	-617	3100	0	0	0
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	20	2	D2	259	-642	3095	259	-642	3095	0	0	0
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	20	3	D3	261	-617	3100	261	-617	3100	0	0	0
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	30	1	D11	228	-601	-2964	0	0	0	228	-601	-2964
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	30	2	D22	224	-602	-2964	0	0	0	224	-602	-2964
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	30	3	D33	228	-601	-2964	0	0	0	228	-601	-2964
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	51	1	N1	224	-600	-2953	0	0	0	224	-600	-2953
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	52	1	N11	247	-629	3093	247	-629	3093	0	0	0
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	11	1	S11	161	-517	-2137	0	0	0	161	-517	-2137
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	15	1	C11	420	-1787	-7769	0	0	0	420	-1787	-7769
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	15	2	C22	420	-1786	-7769	0	0	0	420	-1786	-7769
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	15	3	C33	419	-1786	-7769	0	0	0	419	-1786	-7769
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	20	1	D1	261	-747	3071	261	-747	3071	0	0	0
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	20	2	D2	259	-771	3065	259	-771	3065	0	0	0
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	20	3	D3	261	-747	3071	261	-747	3071	0	0	0
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	30	1	D11	228	-705	-2942	0	0	0	228	-705	-2942
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	30	2	D22	224	-704	-2942	0	0	0	224	-704	-2942
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	30	3	D33	228	-705	-2942	0	0	0	228	-705	-2942
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	51	1	N1	224	-701	-2931	0	0	0	224	-701	-2931
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	52	1	N11	247	-758	3064	247	-758	3064	0	0	0
24	6	BROKEN CONDUCTOR (EXTREME ICE)-BACK	11	1	S11	161	-446	-2018	0	0	0	161	-446	-2018
24	6	BROKEN CONDUCTOR (EXTREME ICE)-BACK	15	1	C11	418	-1559	-7052	0	0	0	418	-1559	-7052
24	6	BROKEN CONDUCTOR (EXTREME ICE)-BACK	15	2	C22	417	-1559	-7052	0	0	0	417	-1559	-7052
24	6	BROKEN CONDUCTOR (EXTREME ICE)-BACK	15	3	C33	417	-1559	-7052	0	0	0	417	-1559	-7052
24	6	BROKEN CONDUCTOR (EXTREME ICE)-BACK	20	1	D1	262	-639	2888	262	-639	2888	0	0	0
24	6	BROKEN CONDUCTOR (EXTREME ICE)-BACK	20	2	D2	260	-662	2883	260	-662	2883	0	0	0
24	6	BROKEN CONDUCTOR (EXTREME ICE)-BACK	20	3	D3	262	-639	2888	262	-639	2888	0	0	0
24	6	BROKEN CONDUCTOR (EXTREME ICE)-BACK	30	1	D11	227	-606	-2739	0	0	0	227	-606	-2739

LC #	WC #	Load Case Description	Set No.	Phase No.	Attach. Joint Labels	Structure Loads			Loads from back span			Loads from ahead span		
						Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)
24	6	BROKEN CONDUCTOR (EXTREME ICE)-BACK	30	2	D22	223	-606	-2739	0	0	0	223	-606	-2739
24	6	BROKEN CONDUCTOR (EXTREME ICE)-BACK	30	3	D33	227	-606	-2739	0	0	0	227	-606	-2739
24	6	BROKEN CONDUCTOR (EXTREME ICE)-BACK	51	1	N1	223	-603	-2727	0	0	0	223	-603	-2727
24	6	BROKEN CONDUCTOR (EXTREME ICE)-BACK	52	1	N11	249	-649	2881	249	-649	2881	0	0	0
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	5	1	C1	347	-1524	6822	347	-1524	6822	0	0	0
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	5	2	C2	307	-1305	6868	307	-1305	6868	0	0	0
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	5	3	C3	267	-1527	6822	267	-1527	6822	0	0	0
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	20	1	D1	101	-423	2203	101	-423	2203	0	0	0
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	20	2	D2	100	-441	2200	100	-441	2200	0	0	0
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	20	3	D3	101	-423	2203	101	-423	2203	0	0	0
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	30	1	D11	93	-436	-2203	0	0	0	93	-436	-2203
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	30	2	D22	91	-437	-2203	0	0	0	91	-437	-2203
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	30	3	D33	93	-436	-2203	0	0	0	93	-436	-2203
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	51	1	N1	91	-436	-2201	0	0	0	91	-436	-2201
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	52	1	N11	94	-431	2200	94	-431	2200	0	0	0
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	5	1	C1	347	-1711	6779	347	-1711	6779	0	0	0
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	5	2	C2	307	-1493	6830	307	-1493	6830	0	0	0
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	5	3	C3	267	-1713	6778	267	-1713	6778	0	0	0
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	20	1	D1	101	-546	2177	101	-546	2177	0	0	0
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	20	2	D2	100	-563	2172	100	-563	2172	0	0	0
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	20	3	D3	101	-546	2177	101	-546	2177	0	0	0
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	30	1	D11	93	-534	-2182	0	0	0	93	-534	-2182
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	30	2	D22	91	-533	-2182	0	0	0	91	-533	-2182
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	30	3	D33	93	-534	-2182	0	0	0	93	-534	-2182
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	51	1	N1	91	-532	-2180	0	0	0	91	-532	-2180
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	52	1	N11	94	-553	2173	94	-553	2173	0	0	0
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	5	1	C1	277	-1086	6660	277	-1086	6660	0	0	0
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	5	2	C2	234	-881	6690	234	-881	6690	0	0	0
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	5	3	C3	191	-1106	6656	191	-1106	6656	0	0	0
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	20	1	D1	53	-311	2506	53	-311	2506	0	0	0
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	20	2	D2	52	-333	2503	52	-333	2503	0	0	0
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	20	3	D3	53	-311	2506	53	-311	2506	0	0	0
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	30	1	D11	58	-328	-2392	0	0	0	58	-328	-2392
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	30	2	D22	58	-331	-2391	0	0	0	58	-331	-2391
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	30	3	D33	58	-328	-2392	0	0	0	58	-328	-2392
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	51	1	N1	57	-325	-2328	0	0	0	57	-325	-2328
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	52	1	N11	43	-319	2457	43	-319	2457	0	0	0
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	5	1	C1	277	-2031	6444	277	-2031	6444	0	0	0
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	5	2	C2	234	-1815	6507	234	-1815	6507	0	0	0
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	5	3	C3	191	-2015	6447	191	-2015	6447	0	0	0
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	20	1	D1	53	-775	2406	53	-775	2406	0	0	0
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	20	2	D2	52	-792	2400	52	-792	2400	0	0	0
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	20	3	D3	53	-775	2406	53	-775	2406	0	0	0
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	30	1	D11	58	-711	-2310	0	0	0	58	-711	-2310
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	30	2	D22	58	-708	-2311	0	0	0	58	-708	-2311
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	30	3	D33	58	-711	-2310	0	0	0	58	-711	-2310
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	51	1	N1	57	-688	-2251	0	0	0	57	-688	-2251
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	52	1	N11	43	-766	2360	43	-766	2360	0	0	0
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	5	1	C1	594	-1827	8049	594	-1827	8049	0	0	0
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	5	2	C2	541	-1569	8103	541	-1569	8103	0	0	0
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	5	3	C3	488	-1830	8048	488	-1830	8048	0	0	0
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	20	1	D1	261	-617	3100	261	-617	3100	0	0	0
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	20	2	D2	259	-642	3095	259	-642	3095	0	0	0
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	20	3	D3	261	-617	3100	261	-617	3100	0	0	0
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	30	1	D11	228	-601	-2964	0	0	0	228	-601	-2964
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	30	2	D22	224	-602	-2964	0	0	0	224	-602	-2964
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	30	3	D33	228	-601	-2964	0	0	0	228	-601	-2964
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	51	1	N1	224	-600	-2953	0	0	0	224	-600	-2953
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	52	1	N11	247	-629	3093	247	-629	3093	0	0	0
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	5	1	C1	594	-1993	8010	594	-1993	8010	0	0	0
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	5	2	C2	541	-1736	8070	541	-1736	8070	0	0	0
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	5	3	C3	488	-1996	8009	488	-1996	8009	0	0	0
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	20	1	D1	261	-747	3071	261	-747	3071	0	0	0
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	20	2	D2	259	-771	3065	259	-771	3065	0	0	0

LC #	WC #	Load Case Description	Set No.	Phase No.	Attach. Joint Labels	Structure Loads			Loads from back span			Loads from ahead span		
						Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	20	3	D3	261	-747	3071	261	-747	3071	0	0	0
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	30	1	D11	228	-705	-2942	0	0	0	228	-705	-2942
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	30	2	D22	224	-704	-2942	0	0	0	224	-704	-2942
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	30	3	D33	228	-705	-2942	0	0	0	228	-705	-2942
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	51	1	N1	224	-701	-2931	0	0	0	224	-701	-2931
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	52	1	N11	247	-758	3064	247	-758	3064	0	0	0
31	6	BROKEN CONDUCTOR (EXTREME ICE)-AHEAD	5	1	C1	586	-1752	7367	586	-1752	7367	0	0	0
31	6	BROKEN CONDUCTOR (EXTREME ICE)-AHEAD	5	2	C2	537	-1516	7419	537	-1516	7419	0	0	0
31	6	BROKEN CONDUCTOR (EXTREME ICE)-AHEAD	5	3	C3	489	-1755	7366	489	-1755	7366	0	0	0
31	6	BROKEN CONDUCTOR (EXTREME ICE)-AHEAD	20	1	D1	262	-639	2888	262	-639	2888	0	0	0
31	6	BROKEN CONDUCTOR (EXTREME ICE)-AHEAD	20	2	D2	260	-662	2883	260	-662	2883	0	0	0
31	6	BROKEN CONDUCTOR (EXTREME ICE)-AHEAD	20	3	D3	262	-639	2888	262	-639	2888	0	0	0
31	6	BROKEN CONDUCTOR (EXTREME ICE)-AHEAD	30	1	D11	227	-606	-2739	0	0	0	227	-606	-2739
31	6	BROKEN CONDUCTOR (EXTREME ICE)-AHEAD	30	2	D22	223	-606	-2739	0	0	0	223	-606	-2739
31	6	BROKEN CONDUCTOR (EXTREME ICE)-AHEAD	30	3	D33	227	-606	-2739	0	0	0	227	-606	-2739
31	6	BROKEN CONDUCTOR (EXTREME ICE)-AHEAD	51	1	N1	223	-603	-2727	0	0	0	223	-603	-2727
31	6	BROKEN CONDUCTOR (EXTREME ICE)-AHEAD	52	1	N11	249	-649	2881	249	-649	2881	0	0	0

LC #	WC #	Load Case Description	Set No.	Phase No.	Attach. Joint Labels	Structure Loads			Loads from back span			Loads from ahead span		
						Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)
7	1	NESC MEDIUM NA+ (250B)	1	1	S1	71	-494	2589	71	-494	2589	0	0	0
7	1	NESC MEDIUM NA+ (250B)	5	1	C1	297	-2352	11287	297	-2352	11287	0	0	0
7	1	NESC MEDIUM NA+ (250B)	5	2	C2	296	-2353	11287	296	-2353	11287	0	0	0
7	1	NESC MEDIUM NA+ (250B)	5	3	C3	296	-2353	11287	296	-2353	11287	0	0	0
7	1	NESC MEDIUM NA+ (250B)	11	1	S11	136	-451	-2592	0	0	0	136	-451	-2592
7	1	NESC MEDIUM NA+ (250B)	15	1	C11	591	-2113	-11333	0	0	0	591	-2113	-11333
7	1	NESC MEDIUM NA+ (250B)	15	2	C22	538	-2432	-11269	0	0	0	538	-2432	-11269
7	1	NESC MEDIUM NA+ (250B)	15	3	C33	485	-2110	-11334	0	0	0	485	-2110	-11334
7	1	NESC MEDIUM NA+ (250B)	20	1	D1	122	-693	3641	122	-693	3641	0	0	0
7	1	NESC MEDIUM NA+ (250B)	20	2	D2	119	-695	3640	119	-695	3640	0	0	0
7	1	NESC MEDIUM NA+ (250B)	20	3	D3	122	-693	3641	122	-693	3641	0	0	0
7	1	NESC MEDIUM NA+ (250B)	30	1	D11	183	-639	-3643	0	0	0	183	-639	-3643
7	1	NESC MEDIUM NA+ (250B)	30	2	D22	181	-615	-3647	0	0	0	181	-615	-3647
7	1	NESC MEDIUM NA+ (250B)	30	3	D33	182	-639	-3643	0	0	0	182	-639	-3643
7	1	NESC MEDIUM NA+ (250B)	51	1	N1	173	-629	-3648	0	0	0	173	-629	-3648
7	1	NESC MEDIUM NA+ (250B)	52	1	N11	119	-695	3638	119	-695	3638	0	0	0
8	1	NESC MEDIUM NA- (250B)	1	1	S1	71	-665	2551	71	-665	2551	0	0	0
8	1	NESC MEDIUM NA- (250B)	5	1	C1	297	-2722	11206	297	-2722	11206	0	0	0
8	1	NESC MEDIUM NA- (250B)	5	2	C2	296	-2722	11206	296	-2722	11206	0	0	0
8	1	NESC MEDIUM NA- (250B)	5	3	C3	296	-2722	11206	296	-2722	11206	0	0	0
8	1	NESC MEDIUM NA- (250B)	11	1	S11	136	-696	-2537	0	0	0	136	-696	-2537
8	1	NESC MEDIUM NA- (250B)	15	1	C11	591	-2644	-11224	0	0	0	591	-2644	-11224
8	1	NESC MEDIUM NA- (250B)	15	2	C22	538	-2960	-11145	0	0	0	538	-2960	-11145
8	1	NESC MEDIUM NA- (250B)	15	3	C33	485	-2641	-11225	0	0	0	485	-2641	-11225
8	1	NESC MEDIUM NA- (250B)	20	1	D1	122	-938	3587	122	-938	3587	0	0	0
8	1	NESC MEDIUM NA- (250B)	20	2	D2	119	-935	3587	119	-935	3587	0	0	0
8	1	NESC MEDIUM NA- (250B)	20	3	D3	122	-937	3587	122	-937	3587	0	0	0
8	1	NESC MEDIUM NA- (250B)	30	1	D11	183	-987	-3565	0	0	0	183	-987	-3565
8	1	NESC MEDIUM NA- (250B)	30	2	D22	181	-961	-3572	0	0	0	181	-961	-3572
8	1	NESC MEDIUM NA- (250B)	30	3	D33	182	-987	-3565	0	0	0	182	-987	-3565
8	1	NESC MEDIUM NA- (250B)	51	1	N1	173	-974	-3572	0	0	0	173	-974	-3572
8	1	NESC MEDIUM NA- (250B)	52	1	N11	119	-935	3585	119	-935	3585	0	0	0
9	4	CONCURRENT ICE/WIND NA+ (250D)	1	1	S1	162	-485	2370	162	-485	2370	0	0	0
9	4	CONCURRENT ICE/WIND NA+ (250D)	5	1	C1	405	-1857	8569	405	-1857	8569	0	0	0
9	4	CONCURRENT ICE/WIND NA+ (250D)	5	2	C2	404	-1858	8569	404	-1858	8569	0	0	0
9	4	CONCURRENT ICE/WIND NA+ (250D)	5	3	C3	404	-1858	8569	404	-1858	8569	0	0	0
9	4	CONCURRENT ICE/WIND NA+ (250D)	11	1	S11	285	-493	-2521	0	0	0	285	-493	-2521
9	4	CONCURRENT ICE/WIND NA+ (250D)	15	1	C11	744	-1787	-8989	0	0	0	744	-1787	-8989
9	4	CONCURRENT ICE/WIND NA+ (250D)	15	2	C22	692	-2040	-8935	0	0	0	692	-2040	-8935
9	4	CONCURRENT ICE/WIND NA+ (250D)	15	3	C33	640	-1785	-8989	0	0	0	640	-1785	-8989
9	4	CONCURRENT ICE/WIND NA+ (250D)	20	1	D1	229	-675	3258	229	-675	3258	0	0	0
9	4	CONCURRENT ICE/WIND NA+ (250D)	20	2	D2	224	-677	3258	224	-677	3258	0	0	0
9	4	CONCURRENT ICE/WIND NA+ (250D)	20	3	D3	229	-675	3258	229	-675	3258	0	0	0
9	4	CONCURRENT ICE/WIND NA+ (250D)	30	1	D11	340	-692	-3444	0	0	0	340	-692	-3444
9	4	CONCURRENT ICE/WIND NA+ (250D)	30	2	D22	337	-668	-3449	0	0	0	337	-668	-3449
9	4	CONCURRENT ICE/WIND NA+ (250D)	30	3	D33	340	-692	-3444	0	0	0	340	-692	-3444
9	4	CONCURRENT ICE/WIND NA+ (250D)	51	1	N1	326	-681	-3448	0	0	0	326	-681	-3448
9	4	CONCURRENT ICE/WIND NA+ (250D)	52	1	N11	224	-674	3245	224	-674	3245	0	0	0
10	4	CONCURRENT ICE/WIND NA- (250D)	1	1	S1	162	-579	2348	162	-579	2348	0	0	0
10	4	CONCURRENT ICE/WIND NA- (250D)	5	1	C1	405	-2002	8537	405	-2002	8537	0	0	0
10	4	CONCURRENT ICE/WIND NA- (250D)	5	2	C2	404	-2002	8537	404	-2002	8537	0	0	0
10	4	CONCURRENT ICE/WIND NA- (250D)	5	3	C3	404	-2002	8537	404	-2002	8537	0	0	0
10	4	CONCURRENT ICE/WIND NA- (250D)	11	1	S11	285	-628	-2491	0	0	0	285	-628	-2491
10	4	CONCURRENT ICE/WIND NA- (250D)	15	1	C11	744	-1995	-8945	0	0	0	744	-1995	-8945
10	4	CONCURRENT ICE/WIND NA- (250D)	15	2	C22	692	-2247	-8886	0	0	0	692	-2247	-8886
10	4	CONCURRENT ICE/WIND NA- (250D)	15	3	C33	640	-1993	-8946	0	0	0	640	-1993	-8946
10	4	CONCURRENT ICE/WIND NA- (250D)	20	1	D1	229	-789	3233	229	-789	3233	0	0	0
10	4	CONCURRENT ICE/WIND NA- (250D)	20	2	D2	224	-788	3233	224	-788	3233	0	0	0
10	4	CONCURRENT ICE/WIND NA- (250D)	20	3	D3	229	-789	3233	229	-789	3233	0	0	0
10	4	CONCURRENT ICE/WIND NA- (250D)	30	1	D11	340	-854	-3408	0	0	0	340	-854	-3408
10	4	CONCURRENT ICE/WIND NA- (250D)	30	2	D22	337	-829	-3414	0	0	0	337	-829	-3414
10	4	CONCURRENT ICE/WIND NA- (250D)	30	3	D33	340	-854	-3408	0	0	0	340	-854	-3408
10	4	CONCURRENT ICE/WIND NA- (250D)	51	1	N1	326	-842	-3413	0	0	0	326	-842	-3413
10	4	CONCURRENT ICE/WIND NA- (250D)	52	1	N11	224	-785	3220	224	-785	3220	0	0	0
11	3	EXTREME WIND NA+ (250C)	1	1	S1	26	-263	1696	26	-263	1696	0	0	0

LC #	WC #	Load Case Description	Set No.	Phase No.	Attach. Joint Labels	Structure Loads			Loads from back span			Loads from ahead span		
						Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)
11	3	EXTREME WIND NA+ (250C)	5	1	C1	152	-1110	6900	152	-1110	6900	0	0	0
11	3	EXTREME WIND NA+ (250C)	5	2	C2	152	-1118	6899	152	-1118	6899	0	0	0
11	3	EXTREME WIND NA+ (250C)	5	3	C3	152	-1127	6896	152	-1127	6896	0	0	0
11	3	EXTREME WIND NA+ (250C)	11	1	S11	73	-229	-1754	0	0	0	73	-229	-1754
11	3	EXTREME WIND NA+ (250C)	15	1	C11	348	-964	-7453	0	0	0	348	-964	-7453
11	3	EXTREME WIND NA+ (250C)	15	2	C22	305	-1184	-7420	0	0	0	305	-1184	-7420
11	3	EXTREME WIND NA+ (250C)	15	3	C33	263	-984	-7449	0	0	0	263	-984	-7449
11	3	EXTREME WIND NA+ (250C)	20	1	D1	47	-372	2629	47	-372	2629	0	0	0
11	3	EXTREME WIND NA+ (250C)	20	2	D2	46	-376	2628	46	-376	2628	0	0	0
11	3	EXTREME WIND NA+ (250C)	20	3	D3	47	-372	2629	47	-372	2629	0	0	0
11	3	EXTREME WIND NA+ (250C)	30	1	D11	77	-329	-2779	0	0	0	77	-329	-2779
11	3	EXTREME WIND NA+ (250C)	30	2	D22	76	-311	-2781	0	0	0	76	-311	-2781
11	3	EXTREME WIND NA+ (250C)	30	3	D33	76	-329	-2779	0	0	0	76	-329	-2779
11	3	EXTREME WIND NA+ (250C)	51	1	N1	67	-322	-2747	0	0	0	67	-322	-2747
11	3	EXTREME WIND NA+ (250C)	52	1	N11	46	-368	2559	46	-368	2559	0	0	0
12	3	EXTREME WIND NA- (250C)	1	1	S1	26	-491	1647	26	-491	1647	0	0	0
12	3	EXTREME WIND NA- (250C)	5	1	C1	152	-1963	6717	152	-1963	6717	0	0	0
12	3	EXTREME WIND NA- (250C)	5	2	C2	152	-1954	6719	152	-1954	6719	0	0	0
12	3	EXTREME WIND NA- (250C)	5	3	C3	152	-1945	6721	152	-1945	6721	0	0	0
12	3	EXTREME WIND NA- (250C)	11	1	S11	73	-540	-1686	0	0	0	73	-540	-1686
12	3	EXTREME WIND NA- (250C)	15	1	C11	348	-2130	-7215	0	0	0	348	-2130	-7215
12	3	EXTREME WIND NA- (250C)	15	2	C22	305	-2322	-7155	0	0	0	305	-2322	-7155
12	3	EXTREME WIND NA- (250C)	15	3	C33	263	-2106	-7221	0	0	0	263	-2106	-7221
12	3	EXTREME WIND NA- (250C)	20	1	D1	47	-793	2537	47	-793	2537	0	0	0
12	3	EXTREME WIND NA- (250C)	20	2	D2	46	-790	2538	46	-790	2538	0	0	0
12	3	EXTREME WIND NA- (250C)	20	3	D3	47	-793	2537	47	-793	2537	0	0	0
12	3	EXTREME WIND NA- (250C)	30	1	D11	77	-897	-2654	0	0	0	77	-897	-2654
12	3	EXTREME WIND NA- (250C)	30	2	D22	76	-877	-2661	0	0	0	76	-877	-2661
12	3	EXTREME WIND NA- (250C)	30	3	D33	76	-897	-2654	0	0	0	76	-897	-2654
12	3	EXTREME WIND NA- (250C)	51	1	N1	67	-871	-2628	0	0	0	67	-871	-2628
12	3	EXTREME WIND NA- (250C)	52	1	N11	46	-767	2473	46	-767	2473	0	0	0
13	6	EXTREME ICE	1	1	S1	147	-455	2016	147	-455	2016	0	0	0
13	6	EXTREME ICE	5	1	C1	371	-1590	7046	371	-1590	7046	0	0	0
13	6	EXTREME ICE	5	2	C2	370	-1590	7046	370	-1590	7046	0	0	0
13	6	EXTREME ICE	5	3	C3	370	-1590	7046	370	-1590	7046	0	0	0
13	6	EXTREME ICE	11	1	S11	257	-482	-2155	0	0	0	257	-482	-2155
13	6	EXTREME ICE	15	1	C11	667	-1582	-7500	0	0	0	667	-1582	-7500
13	6	EXTREME ICE	15	2	C22	624	-1793	-7452	0	0	0	624	-1793	-7452
13	6	EXTREME ICE	15	3	C33	580	-1580	-7500	0	0	0	580	-1580	-7500
13	6	EXTREME ICE	20	1	D1	209	-617	2736	209	-617	2736	0	0	0
13	6	EXTREME ICE	20	2	D2	205	-617	2736	205	-617	2736	0	0	0
13	6	EXTREME ICE	20	3	D3	209	-617	2736	209	-617	2736	0	0	0
13	6	EXTREME ICE	30	1	D11	309	-659	-2922	0	0	0	309	-659	-2922
13	6	EXTREME ICE	30	2	D22	307	-639	-2926	0	0	0	307	-639	-2926
13	6	EXTREME ICE	30	3	D33	309	-659	-2922	0	0	0	309	-659	-2922
13	6	EXTREME ICE	51	1	N1	297	-649	-2925	0	0	0	297	-649	-2925
13	6	EXTREME ICE	52	1	N11	205	-615	2724	205	-615	2724	0	0	0
14	9	UPLIFT	1	1	S1	25	-259	1148	25	-259	1148	0	0	0
14	9	UPLIFT	5	1	C1	135	-1605	7112	135	-1605	7112	0	0	0
14	9	UPLIFT	5	2	C2	135	-1605	7112	135	-1605	7112	0	0	0
14	9	UPLIFT	5	3	C3	135	-1605	7112	135	-1605	7112	0	0	0
14	9	UPLIFT	11	1	S11	55	-201	-897	0	0	0	55	-201	-897
14	9	UPLIFT	15	1	C11	317	-1422	-6743	0	0	0	317	-1422	-6743
14	9	UPLIFT	15	2	C22	278	-1612	-6700	0	0	0	278	-1612	-6700
14	9	UPLIFT	15	3	C33	239	-1420	-6744	0	0	0	239	-1420	-6744
14	9	UPLIFT	20	1	D1	45	-401	1778	45	-401	1778	0	0	0
14	9	UPLIFT	20	2	D2	44	-401	1778	44	-401	1778	0	0	0
14	9	UPLIFT	20	3	D3	45	-401	1778	45	-401	1778	0	0	0
14	9	UPLIFT	30	1	D11	70	-325	-1443	0	0	0	70	-325	-1443
14	9	UPLIFT	30	2	D22	69	-315	-1445	0	0	0	69	-315	-1445
14	9	UPLIFT	30	3	D33	70	-325	-1443	0	0	0	70	-325	-1443
14	9	UPLIFT	51	1	N1	65	-321	-1447	0	0	0	65	-321	-1447
14	9	UPLIFT	52	1	N11	44	-404	1791	44	-404	1791	0	0	0
15	28	CAMBER	1	1	S1	26	-159	704	26	-159	704	0	0	0
15	28	CAMBER	5	1	C1	146	-858	3802	146	-858	3802	0	0	0

LC #	WC #	Load Case Description	Set No.	Phase No.	Attach. Joint Labels	Structure Loads			Loads from back span			Loads from ahead span		
						Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)
15	28	CAMBER	5	2	C2	146	-858	3802	146	-858	3802	0	0	0
15	28	CAMBER	5	3	C3	146	-858	3802	146	-858	3802	0	0	0
15	28	CAMBER	11	1	S11	50	-138	-616	0	0	0	50	-138	-616
15	28	CAMBER	15	1	C11	277	-816	-3869	0	0	0	277	-816	-3869
15	28	CAMBER	15	2	C22	255	-925	-3845	0	0	0	255	-925	-3845
15	28	CAMBER	15	3	C33	233	-815	-3870	0	0	0	233	-815	-3870
15	28	CAMBER	20	1	D1	48	-198	879	48	-198	879	0	0	0
15	28	CAMBER	20	2	D2	47	-198	879	47	-198	879	0	0	0
15	28	CAMBER	20	3	D3	48	-198	879	48	-198	879	0	0	0
15	28	CAMBER	30	1	D11	70	-194	-859	0	0	0	70	-194	-859
15	28	CAMBER	30	2	D22	70	-188	-861	0	0	0	70	-188	-861
15	28	CAMBER	30	3	D33	70	-194	-859	0	0	0	70	-194	-859
15	28	CAMBER	51	1	N1	67	-191	-861	0	0	0	67	-191	-861
15	28	CAMBER	52	1	N11	47	-198	880	47	-198	880	0	0	0
16	8	BLOWOUT DEFLECTION NA+	1	1	S1	26	-159	803	26	-159	803	0	0	0
16	8	BLOWOUT DEFLECTION NA+	5	1	C1	145	-826	4038	145	-826	4038	0	0	0
16	8	BLOWOUT DEFLECTION NA+	5	2	C2	145	-826	4038	145	-826	4038	0	0	0
16	8	BLOWOUT DEFLECTION NA+	5	3	C3	145	-826	4038	145	-826	4038	0	0	0
16	8	BLOWOUT DEFLECTION NA+	11	1	S11	52	-134	-741	0	0	0	52	-134	-741
16	8	BLOWOUT DEFLECTION NA+	15	1	C11	281	-761	-4181	0	0	0	281	-761	-4181
16	8	BLOWOUT DEFLECTION NA+	15	2	C22	257	-879	-4158	0	0	0	257	-879	-4158
16	8	BLOWOUT DEFLECTION NA+	15	3	C33	233	-760	-4181	0	0	0	233	-760	-4181
16	8	BLOWOUT DEFLECTION NA+	20	1	D1	47	-204	1104	47	-204	1104	0	0	0
16	8	BLOWOUT DEFLECTION NA+	20	2	D2	46	-205	1103	46	-205	1103	0	0	0
16	8	BLOWOUT DEFLECTION NA+	20	3	D3	47	-204	1104	47	-204	1104	0	0	0
16	8	BLOWOUT DEFLECTION NA+	30	1	D11	70	-188	-1117	0	0	0	70	-188	-1117
16	8	BLOWOUT DEFLECTION NA+	30	2	D22	70	-181	-1118	0	0	0	70	-181	-1118
16	8	BLOWOUT DEFLECTION NA+	30	3	D33	70	-188	-1117	0	0	0	70	-188	-1117
16	8	BLOWOUT DEFLECTION NA+	51	1	N1	66	-185	-1118	0	0	0	66	-185	-1118
16	8	BLOWOUT DEFLECTION NA+	52	1	N11	46	-205	1102	46	-205	1102	0	0	0
17	8	BLOWOUT DEFLECTION NA-	1	1	S1	26	-201	794	26	-201	794	0	0	0
17	8	BLOWOUT DEFLECTION NA-	5	1	C1	145	-988	4003	145	-988	4003	0	0	0
17	8	BLOWOUT DEFLECTION NA-	5	2	C2	145	-988	4003	145	-988	4003	0	0	0
17	8	BLOWOUT DEFLECTION NA-	5	3	C3	145	-988	4003	145	-988	4003	0	0	0
17	8	BLOWOUT DEFLECTION NA-	11	1	S11	52	-195	-728	0	0	0	52	-195	-728
17	8	BLOWOUT DEFLECTION NA-	15	1	C11	281	-993	-4133	0	0	0	281	-993	-4133
17	8	BLOWOUT DEFLECTION NA-	15	2	C22	257	-1109	-4104	0	0	0	257	-1109	-4104
17	8	BLOWOUT DEFLECTION NA-	15	3	C33	233	-991	-4134	0	0	0	233	-991	-4134
17	8	BLOWOUT DEFLECTION NA-	20	1	D1	47	-290	1085	47	-290	1085	0	0	0
17	8	BLOWOUT DEFLECTION NA-	20	2	D2	46	-289	1085	46	-289	1085	0	0	0
17	8	BLOWOUT DEFLECTION NA-	20	3	D3	47	-290	1085	47	-290	1085	0	0	0
17	8	BLOWOUT DEFLECTION NA-	30	1	D11	70	-310	-1090	0	0	0	70	-310	-1090
17	8	BLOWOUT DEFLECTION NA-	30	2	D22	70	-302	-1092	0	0	0	70	-302	-1092
17	8	BLOWOUT DEFLECTION NA-	30	3	D33	70	-310	-1090	0	0	0	70	-310	-1090
17	8	BLOWOUT DEFLECTION NA-	51	1	N1	66	-306	-1092	0	0	0	66	-306	-1092
17	8	BLOWOUT DEFLECTION NA-	52	1	N11	46	-289	1084	46	-289	1084	0	0	0
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	11	1	S11	91	-299	-1565	0	0	0	91	-299	-1565
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	15	1	C11	394	-1336	-6857	0	0	0	394	-1336	-6857
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	15	2	C22	359	-1528	-6817	0	0	0	359	-1528	-6817
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	15	3	C33	323	-1334	-6858	0	0	0	323	-1334	-6858
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	20	1	D1	81	-445	2201	81	-445	2201	0	0	0
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	20	2	D2	80	-446	2201	80	-446	2201	0	0	0
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	20	3	D3	81	-445	2201	81	-445	2201	0	0	0
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	30	1	D11	122	-423	-2200	0	0	0	122	-423	-2200
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	30	2	D22	121	-408	-2203	0	0	0	121	-408	-2203
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	30	3	D33	122	-423	-2200	0	0	0	122	-423	-2200
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	51	1	N1	115	-417	-2203	0	0	0	115	-417	-2203
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	52	1	N11	79	-446	2199	79	-446	2199	0	0	0
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	11	1	S11	91	-397	-1543	0	0	0	91	-397	-1543
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	15	1	C11	394	-1548	-6813	0	0	0	394	-1548	-6813
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	15	2	C22	359	-1739	-6767	0	0	0	359	-1739	-6767
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	15	3	C33	323	-1546	-6814	0	0	0	323	-1546	-6814
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	20	1	D1	81	-543	2179	81	-543	2179	0	0	0
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	20	2	D2	80	-542	2180	80	-542	2180	0	0	0
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	20	3	D3	81	-543	2179	81	-543	2179	0	0	0

LC #	WC #	Load Case Description	Set No.	Phase No.	Attach. Joint Labels	Structure Loads			Loads from back span			Loads from ahead span		
						Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	30	1	D11	122	-562	-2169	0	0	0	122	-562	-2169
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	30	2	D22	121	-547	-2173	0	0	0	121	-547	-2173
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	30	3	D33	122	-562	-2169	0	0	0	122	-562	-2169
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	51	1	N1	115	-555	-2173	0	0	0	115	-555	-2173
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	52	1	N11	79	-542	2178	79	-542	2178	0	0	0
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	11	1	S11	66	-208	-1594	0	0	0	66	-208	-1594
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	15	1	C11	316	-876	-6775	0	0	0	316	-876	-6775
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	15	2	C22	278	-1076	-6745	0	0	0	278	-1076	-6745
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	15	3	C33	239	-894	-6772	0	0	0	239	-894	-6772
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	20	1	D1	43	-339	2390	43	-339	2390	0	0	0
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	20	2	D2	42	-342	2389	42	-342	2389	0	0	0
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	20	3	D3	43	-339	2390	43	-339	2390	0	0	0
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	30	1	D11	70	-299	-2527	0	0	0	70	-299	-2527
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	30	2	D22	69	-283	-2528	0	0	0	69	-283	-2528
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	30	3	D33	70	-299	-2527	0	0	0	70	-299	-2527
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	51	1	N1	61	-293	-2497	0	0	0	61	-293	-2497
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	52	1	N11	42	-335	2327	42	-335	2327	0	0	0
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	11	1	S11	66	-491	-1533	0	0	0	66	-491	-1533
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	15	1	C11	316	-1936	-6559	0	0	0	316	-1936	-6559
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	15	2	C22	278	-2111	-6505	0	0	0	278	-2111	-6505
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	15	3	C33	239	-1914	-6564	0	0	0	239	-1914	-6564
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	20	1	D1	43	-721	2307	43	-721	2307	0	0	0
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	20	2	D2	42	-718	2307	42	-718	2307	0	0	0
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	20	3	D3	43	-721	2307	43	-721	2307	0	0	0
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	30	1	D11	70	-816	-2413	0	0	0	70	-816	-2413
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	30	2	D22	69	-797	-2419	0	0	0	69	-797	-2419
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	30	3	D33	70	-816	-2413	0	0	0	70	-816	-2413
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	51	1	N1	61	-792	-2389	0	0	0	61	-792	-2389
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	52	1	N11	42	-697	2248	42	-697	2248	0	0	0
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	11	1	S11	259	-448	-2292	0	0	0	259	-448	-2292
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	15	1	C11	676	-1625	-8172	0	0	0	676	-1625	-8172
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	15	2	C22	629	-1855	-8122	0	0	0	629	-1855	-8122
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	15	3	C33	581	-1623	-8172	0	0	0	581	-1623	-8172
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	20	1	D1	208	-614	2962	208	-614	2962	0	0	0
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	20	2	D2	204	-615	2962	204	-615	2962	0	0	0
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	20	3	D3	208	-614	2962	208	-614	2962	0	0	0
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	30	1	D11	309	-629	-3131	0	0	0	309	-629	-3131
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	30	2	D22	307	-607	-3135	0	0	0	307	-607	-3135
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	30	3	D33	309	-629	-3131	0	0	0	309	-629	-3131
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	51	1	N1	296	-619	-3135	0	0	0	296	-619	-3135
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	52	1	N11	204	-612	2950	204	-612	2950	0	0	0
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	11	1	S11	259	-571	-2265	0	0	0	259	-571	-2265
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	15	1	C11	676	-1814	-8132	0	0	0	676	-1814	-8132
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	15	2	C22	629	-2042	-8078	0	0	0	629	-2042	-8078
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	15	3	C33	581	-1811	-8133	0	0	0	581	-1811	-8133
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	20	1	D1	208	-717	2939	208	-717	2939	0	0	0
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	20	2	D2	204	-716	2939	204	-716	2939	0	0	0
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	20	3	D3	208	-717	2939	208	-717	2939	0	0	0
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	30	1	D11	309	-776	-3098	0	0	0	309	-776	-3098
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	30	2	D22	307	-754	-3104	0	0	0	307	-754	-3104
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	30	3	D33	309	-776	-3098	0	0	0	309	-776	-3098
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	51	1	N1	296	-765	-3102	0	0	0	296	-765	-3102
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	52	1	N11	204	-714	2927	204	-714	2927	0	0	0
24	6	ROKEN CONDUCTOR (EXTREME ICE)-BA	11	1	S11	257	-482	-2155	0	0	0	257	-482	-2155
24	6	ROKEN CONDUCTOR (EXTREME ICE)-BA	15	1	C11	667	-1582	-7500	0	0	0	667	-1582	-7500
24	6	ROKEN CONDUCTOR (EXTREME ICE)-BA	15	2	C22	624	-1793	-7452	0	0	0	624	-1793	-7452
24	6	ROKEN CONDUCTOR (EXTREME ICE)-BA	15	3	C33	580	-1580	-7500	0	0	0	580	-1580	-7500
24	6	ROKEN CONDUCTOR (EXTREME ICE)-BA	20	1	D1	209	-617	2736	209	-617	2736	0	0	0
24	6	ROKEN CONDUCTOR (EXTREME ICE)-BA	20	2	D2	205	-617	2736	205	-617	2736	0	0	0
24	6	ROKEN CONDUCTOR (EXTREME ICE)-BA	20	3	D3	209	-617	2736	209	-617	2736	0	0	0
24	6	ROKEN CONDUCTOR (EXTREME ICE)-BA	30	1	D11	309	-659	-2922	0	0	0	309	-659	-2922
24	6	ROKEN CONDUCTOR (EXTREME ICE)-BA	30	2	D22	307	-639	-2926	0	0	0	307	-639	-2926
24	6	ROKEN CONDUCTOR (EXTREME ICE)-BA	30	3	D33	309	-659	-2922	0	0	0	309	-659	-2922
24	6	ROKEN CONDUCTOR (EXTREME ICE)-BA	51	1	N1	297	-649	-2925	0	0	0	297	-649	-2925
24	6	ROKEN CONDUCTOR (EXTREME ICE)-BA	52	1	N11	205	-615	2724	205	-615	2724	0	0	0

LC #	WC #	Load Case Description	Set No.	Phase No.	Attach. Joint Labels	Structure Loads			Loads from back span			Loads from ahead span		
						Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	5	1	C1	198	-1464	6832	198	-1464	6832	0	0	0
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	5	2	C2	197	-1464	6832	197	-1464	6832	0	0	0
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	5	3	C3	197	-1464	6832	197	-1464	6832	0	0	0
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	20	1	D1	81	-445	2201	81	-445	2201	0	0	0
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	20	2	D2	80	-446	2201	80	-446	2201	0	0	0
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	20	3	D3	81	-445	2201	81	-445	2201	0	0	0
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	30	1	D11	122	-423	-2200	0	0	0	122	-423	-2200
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	30	2	D22	121	-408	-2203	0	0	0	121	-408	-2203
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	30	3	D33	122	-423	-2200	0	0	0	122	-423	-2200
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	51	1	N1	115	-417	-2203	0	0	0	115	-417	-2203
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	52	1	N11	79	-446	2199	79	-446	2199	0	0	0
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	5	1	C1	198	-1612	6800	198	-1612	6800	0	0	0
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	5	2	C2	197	-1612	6800	197	-1612	6800	0	0	0
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	5	3	C3	197	-1612	6800	197	-1612	6800	0	0	0
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	20	1	D1	81	-543	2179	81	-543	2179	0	0	0
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	20	2	D2	80	-542	2180	80	-542	2180	0	0	0
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	20	3	D3	81	-543	2179	81	-543	2179	0	0	0
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	30	1	D11	122	-562	-2169	0	0	0	122	-562	-2169
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	30	2	D22	121	-547	-2173	0	0	0	121	-547	-2173
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	30	3	D33	122	-562	-2169	0	0	0	122	-562	-2169
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	51	1	N1	115	-555	-2173	0	0	0	115	-555	-2173
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	52	1	N11	79	-542	2178	79	-542	2178	0	0	0
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	5	1	C1	138	-1009	6273	138	-1009	6273	0	0	0
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	5	2	C2	138	-1016	6271	138	-1016	6271	0	0	0
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	5	3	C3	138	-1025	6270	138	-1025	6270	0	0	0
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	20	1	D1	43	-339	2390	43	-339	2390	0	0	0
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	20	2	D2	42	-342	2389	42	-342	2389	0	0	0
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	20	3	D3	43	-339	2390	43	-339	2390	0	0	0
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	30	1	D11	70	-299	-2527	0	0	0	70	-299	-2527
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	30	2	D22	69	-283	-2528	0	0	0	69	-283	-2528
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	30	3	D33	70	-299	-2527	0	0	0	70	-299	-2527
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	51	1	N1	61	-293	-2497	0	0	0	61	-293	-2497
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	52	1	N11	42	-335	2327	42	-335	2327	0	0	0
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	5	1	C1	138	-1784	6106	138	-1784	6106	0	0	0
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	5	2	C2	138	-1777	6108	138	-1777	6108	0	0	0
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	5	3	C3	138	-1768	6110	138	-1768	6110	0	0	0
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	20	1	D1	43	-721	2307	43	-721	2307	0	0	0
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	20	2	D2	42	-718	2307	42	-718	2307	0	0	0
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	20	3	D3	43	-721	2307	43	-721	2307	0	0	0
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	30	1	D11	70	-816	-2413	0	0	0	70	-816	-2413
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	30	2	D22	69	-797	-2419	0	0	0	69	-797	-2419
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	30	3	D33	70	-816	-2413	0	0	0	70	-816	-2413
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	51	1	N1	61	-792	-2389	0	0	0	61	-792	-2389
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	52	1	N11	42	-697	2248	42	-697	2248	0	0	0
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	5	1	C1	368	-1689	7790	368	-1689	7790	0	0	0
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	5	2	C2	368	-1689	7790	368	-1689	7790	0	0	0
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	5	3	C3	367	-1689	7790	367	-1689	7790	0	0	0
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	20	1	D1	208	-614	2962	208	-614	2962	0	0	0
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	20	2	D2	204	-615	2962	204	-615	2962	0	0	0
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	20	3	D3	208	-614	2962	208	-614	2962	0	0	0
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	30	1	D11	309	-629	-3131	0	0	0	309	-629	-3131
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	30	2	D22	307	-607	-3135	0	0	0	307	-607	-3135
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	30	3	D33	309	-629	-3131	0	0	0	309	-629	-3131
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	51	1	N1	296	-619	-3135	0	0	0	296	-619	-3135
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	52	1	N11	204	-612	2950	204	-612	2950	0	0	0
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	5	1	C1	368	-1820	7761	368	-1820	7761	0	0	0
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	5	2	C2	368	-1820	7761	368	-1820	7761	0	0	0
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	5	3	C3	367	-1820	7761	367	-1820	7761	0	0	0
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	20	1	D1	208	-717	2939	208	-717	2939	0	0	0
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	20	2	D2	204	-716	2939	204	-716	2939	0	0	0
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	20	3	D3	208	-717	2939	208	-717	2939	0	0	0
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	30	1	D11	309	-776	-3098	0	0	0	309	-776	-3098
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	30	2	D22	307	-754	-3104	0	0	0	307	-754	-3104
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	30	3	D33	309	-776	-3098	0	0	0	309	-776	-3098
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	51	1	N1	296	-765	-3102	0	0	0	296	-765	-3102

LC #	WC #	Load Case Description	Set No.	Phase No.	Attach. Joint Labels	Structure Loads			Loads from back span			Loads from ahead span		
						Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	52	1	N11	204	-714	2927	204	-714	2927	0	0	0
31	6	OKEN CONDUCTOR (EXTREME ICE)-AHE	5	1	C1	371	-1590	7046	371	-1590	7046	0	0	0
31	6	OKEN CONDUCTOR (EXTREME ICE)-AHE	5	2	C2	370	-1590	7046	370	-1590	7046	0	0	0
31	6	OKEN CONDUCTOR (EXTREME ICE)-AHE	5	3	C3	370	-1590	7046	370	-1590	7046	0	0	0
31	6	OKEN CONDUCTOR (EXTREME ICE)-AHE	20	1	D1	209	-617	2736	209	-617	2736	0	0	0
31	6	OKEN CONDUCTOR (EXTREME ICE)-AHE	20	2	D2	205	-617	2736	205	-617	2736	0	0	0
31	6	OKEN CONDUCTOR (EXTREME ICE)-AHE	20	3	D3	209	-617	2736	209	-617	2736	0	0	0
31	6	OKEN CONDUCTOR (EXTREME ICE)-AHE	30	1	D11	309	-659	-2922	0	0	0	309	-659	-2922
31	6	OKEN CONDUCTOR (EXTREME ICE)-AHE	30	2	D22	307	-639	-2926	0	0	0	307	-639	-2926
31	6	OKEN CONDUCTOR (EXTREME ICE)-AHE	30	3	D33	309	-659	-2922	0	0	0	309	-659	-2922
31	6	OKEN CONDUCTOR (EXTREME ICE)-AHE	51	1	N1	297	-649	-2925	0	0	0	297	-649	-2925
31	6	OKEN CONDUCTOR (EXTREME ICE)-AHE	52	1	N11	205	-615	2724	205	-615	2724	0	0	0

LC #	WC #	Load Case Description	Set No.	Phase No.	Attach. Joint Labels	Structure Loads			Loads from back span			Loads from ahead span		
						Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)
7	1	NESC MEDIUM NA+ (250B)	1	1	S1	122	-461	2589	122	-461	2589	0	0	0
7	1	NESC MEDIUM NA+ (250B)	5	1	C1	536	-2057	11343	536	-2057	11343	0	0	0
7	1	NESC MEDIUM NA+ (250B)	5	2	C2	468	-2465	11261	468	-2465	11261	0	0	0
7	1	NESC MEDIUM NA+ (250B)	5	3	C3	399	-2053	11343	399	-2053	11343	0	0	0
7	1	NESC MEDIUM NA+ (250B)	11	1	S11	134	-444	-2593	0	0	0	134	-444	-2593
7	1	NESC MEDIUM NA+ (250B)	15	1	C11	639	-1959	-11359	0	0	0	639	-1959	-11359
7	1	NESC MEDIUM NA+ (250B)	15	2	C22	561	-2427	-11269	0	0	0	561	-2427	-11269
7	1	NESC MEDIUM NA+ (250B)	15	3	C33	509	-1962	-11359	0	0	0	509	-1962	-11359
7	1	NESC MEDIUM NA+ (250B)	20	1	D1	145	-655	3639	145	-655	3639	0	0	0
7	1	NESC MEDIUM NA+ (250B)	20	2	D2	144	-623	3644	144	-623	3644	0	0	0
7	1	NESC MEDIUM NA+ (250B)	20	3	D3	145	-655	3639	145	-655	3639	0	0	0
7	1	NESC MEDIUM NA+ (250B)	30	1	D11	175	-653	-3644	0	0	0	175	-653	-3644
7	1	NESC MEDIUM NA+ (250B)	30	2	D22	174	-659	-3643	0	0	0	174	-659	-3643
7	1	NESC MEDIUM NA+ (250B)	30	3	D33	175	-662	-3643	0	0	0	175	-662	-3643
7	1	NESC MEDIUM NA+ (250B)	51	1	N1	145	-659	-3643	0	0	0	145	-659	-3643
7	1	NESC MEDIUM NA+ (250B)	52	1	N11	134	-641	3644	134	-641	3644	0	0	0
8	1	NESC MEDIUM NA- (250B)	1	1	S1	122	-653	2547	122	-653	2547	0	0	0
8	1	NESC MEDIUM NA- (250B)	5	1	C1	536	-2474	11261	536	-2474	11261	0	0	0
8	1	NESC MEDIUM NA- (250B)	5	2	C2	468	-2879	11165	468	-2879	11165	0	0	0
8	1	NESC MEDIUM NA- (250B)	5	3	C3	399	-2469	11262	399	-2469	11262	0	0	0
8	1	NESC MEDIUM NA- (250B)	11	1	S11	134	-634	-2554	0	0	0	134	-634	-2554
8	1	NESC MEDIUM NA- (250B)	15	1	C11	639	-2370	-11283	0	0	0	639	-2370	-11283
8	1	NESC MEDIUM NA- (250B)	15	2	C22	561	-2835	-11175	0	0	0	561	-2835	-11175
8	1	NESC MEDIUM NA- (250B)	15	3	C33	509	-2373	-11282	0	0	0	509	-2373	-11282
8	1	NESC MEDIUM NA- (250B)	20	1	D1	145	-927	3580	145	-927	3580	0	0	0
8	1	NESC MEDIUM NA- (250B)	20	2	D2	144	-893	3588	144	-893	3588	0	0	0
8	1	NESC MEDIUM NA- (250B)	20	3	D3	145	-927	3580	145	-927	3580	0	0	0
8	1	NESC MEDIUM NA- (250B)	30	1	D11	175	-923	-3586	0	0	0	175	-923	-3586
8	1	NESC MEDIUM NA- (250B)	30	2	D22	174	-926	-3585	0	0	0	174	-926	-3585
8	1	NESC MEDIUM NA- (250B)	30	3	D33	175	-931	-3584	0	0	0	175	-931	-3584
8	1	NESC MEDIUM NA- (250B)	51	1	N1	145	-926	-3586	0	0	0	145	-926	-3586
8	1	NESC MEDIUM NA- (250B)	52	1	N11	134	-911	3587	134	-911	3587	0	0	0
9	4	CONCURRENT ICE/WIND NA+ (250D)	1	1	S1	246	-491	2521	246	-491	2521	0	0	0
9	4	CONCURRENT ICE/WIND NA+ (250D)	5	1	C1	652	-1720	9002	652	-1720	9002	0	0	0
9	4	CONCURRENT ICE/WIND NA+ (250D)	5	2	C2	585	-2044	8934	585	-2044	8934	0	0	0
9	4	CONCURRENT ICE/WIND NA+ (250D)	5	3	C3	519	-1716	9002	519	-1716	9002	0	0	0
9	4	CONCURRENT ICE/WIND NA+ (250D)	11	1	S11	263	-476	-2536	0	0	0	263	-476	-2536
9	4	CONCURRENT ICE/WIND NA+ (250D)	15	1	C11	750	-1646	-9046	0	0	0	750	-1646	-9046
9	4	CONCURRENT ICE/WIND NA+ (250D)	15	2	C22	675	-2019	-8970	0	0	0	675	-2019	-8970
9	4	CONCURRENT ICE/WIND NA+ (250D)	15	3	C33	624	-1648	-9045	0	0	0	624	-1648	-9045
9	4	CONCURRENT ICE/WIND NA+ (250D)	20	1	D1	267	-689	3445	267	-689	3445	0	0	0
9	4	CONCURRENT ICE/WIND NA+ (250D)	20	2	D2	265	-658	3451	265	-658	3451	0	0	0
9	4	CONCURRENT ICE/WIND NA+ (250D)	20	3	D3	267	-689	3445	267	-689	3445	0	0	0
9	4	CONCURRENT ICE/WIND NA+ (250D)	30	1	D11	306	-689	-3462	0	0	0	306	-689	-3462
9	4	CONCURRENT ICE/WIND NA+ (250D)	30	2	D22	304	-694	-3461	0	0	0	304	-694	-3461
9	4	CONCURRENT ICE/WIND NA+ (250D)	30	3	D33	306	-697	-3460	0	0	0	306	-697	-3460
9	4	CONCURRENT ICE/WIND NA+ (250D)	51	1	N1	265	-694	-3461	0	0	0	265	-694	-3461
9	4	CONCURRENT ICE/WIND NA+ (250D)	52	1	N11	251	-675	3449	251	-675	3449	0	0	0
10	4	CONCURRENT ICE/WIND NA- (250D)	1	1	S1	246	-597	2499	246	-597	2499	0	0	0
10	4	CONCURRENT ICE/WIND NA- (250D)	5	1	C1	652	-1883	8969	652	-1883	8969	0	0	0
10	4	CONCURRENT ICE/WIND NA- (250D)	5	2	C2	585	-2205	8896	585	-2205	8896	0	0	0
10	4	CONCURRENT ICE/WIND NA- (250D)	5	3	C3	519	-1879	8970	519	-1879	8970	0	0	0
10	4	CONCURRENT ICE/WIND NA- (250D)	11	1	S11	263	-581	-2514	0	0	0	263	-581	-2514
10	4	CONCURRENT ICE/WIND NA- (250D)	15	1	C11	750	-1807	-9015	0	0	0	750	-1807	-9015
10	4	CONCURRENT ICE/WIND NA- (250D)	15	2	C22	675	-2178	-8933	0	0	0	675	-2178	-8933
10	4	CONCURRENT ICE/WIND NA- (250D)	15	3	C33	624	-1809	-9015	0	0	0	624	-1809	-9015
10	4	CONCURRENT ICE/WIND NA- (250D)	20	1	D1	267	-815	3417	267	-815	3417	0	0	0
10	4	CONCURRENT ICE/WIND NA- (250D)	20	2	D2	265	-783	3424	265	-783	3424	0	0	0
10	4	CONCURRENT ICE/WIND NA- (250D)	20	3	D3	267	-815	3417	267	-815	3417	0	0	0
10	4	CONCURRENT ICE/WIND NA- (250D)	30	1	D11	306	-814	-3435	0	0	0	306	-814	-3435
10	4	CONCURRENT ICE/WIND NA- (250D)	30	2	D22	304	-818	-3434	0	0	0	304	-818	-3434
10	4	CONCURRENT ICE/WIND NA- (250D)	30	3	D33	306	-822	-3433	0	0	0	306	-822	-3433
10	4	CONCURRENT ICE/WIND NA- (250D)	51	1	N1	265	-818	-3434	0	0	0	265	-818	-3434
10	4	CONCURRENT ICE/WIND NA- (250D)	52	1	N11	251	-800	3422	251	-800	3422	0	0	0
11	3	EXTREME WIND NA+ (250C)	1	1	S1	73	-249	1748	73	-249	1748	0	0	0
11	3	EXTREME WIND NA+ (250C)	5	1	C1	330	-1008	7438	330	-1008	7438	0	0	0
11	3	EXTREME WIND NA+ (250C)	5	2	C2	276	-1285	7395	276	-1285	7395	0	0	0

LC #	WC #	Load Case Description	Set No.	Phase No.	Attach. Joint Labels	Structure Loads			Loads from back span			Loads from ahead span		
						Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)
11	3	EXTREME WIND NA+ (250C)	5	3	C3	222	-1024	7436	222	-1024	7436	0	0	0
11	3	EXTREME WIND NA+ (250C)	11	1	S11	86	-239	-1752	0	0	0	86	-239	-1752
11	3	EXTREME WIND NA+ (250C)	15	1	C11	414	-952	-7466	0	0	0	414	-952	-7466
11	3	EXTREME WIND NA+ (250C)	15	2	C22	352	-1269	-7419	0	0	0	352	-1269	-7419
11	3	EXTREME WIND NA+ (250C)	15	3	C33	311	-973	-7464	0	0	0	311	-973	-7464
11	3	EXTREME WIND NA+ (250C)	20	1	D1	62	-372	2768	62	-372	2768	0	0	0
11	3	EXTREME WIND NA+ (250C)	20	2	D2	62	-349	2771	62	-349	2771	0	0	0
11	3	EXTREME WIND NA+ (250C)	20	3	D3	62	-373	2768	62	-373	2768	0	0	0
11	3	EXTREME WIND NA+ (250C)	30	1	D11	95	-373	-2782	0	0	0	95	-373	-2782
11	3	EXTREME WIND NA+ (250C)	30	2	D22	95	-378	-2781	0	0	0	95	-378	-2781
11	3	EXTREME WIND NA+ (250C)	30	3	D33	95	-379	-2781	0	0	0	95	-379	-2781
11	3	EXTREME WIND NA+ (250C)	51	1	N1	64	-375	-2747	0	0	0	64	-375	-2747
11	3	EXTREME WIND NA+ (250C)	52	1	N11	51	-358	2738	51	-358	2738	0	0	0
12	3	EXTREME WIND NA- (250C)	1	1	S1	73	-497	1696	73	-497	1696	0	0	0
12	3	EXTREME WIND NA- (250C)	5	1	C1	330	-1938	7259	330	-1938	7259	0	0	0
12	3	EXTREME WIND NA- (250C)	5	2	C2	276	-2190	7188	276	-2190	7188	0	0	0
12	3	EXTREME WIND NA- (250C)	5	3	C3	222	-1916	7265	222	-1916	7265	0	0	0
12	3	EXTREME WIND NA- (250C)	11	1	S11	86	-484	-1702	0	0	0	86	-484	-1702
12	3	EXTREME WIND NA- (250C)	15	1	C11	414	-1870	-7298	0	0	0	414	-1870	-7298
12	3	EXTREME WIND NA- (250C)	15	2	C22	352	-2163	-7218	0	0	0	352	-2163	-7218
12	3	EXTREME WIND NA- (250C)	15	3	C33	311	-1854	-7303	0	0	0	311	-1854	-7303
12	3	EXTREME WIND NA- (250C)	20	1	D1	62	-820	2673	62	-820	2673	0	0	0
12	3	EXTREME WIND NA- (250C)	20	2	D2	62	-794	2681	62	-794	2681	0	0	0
12	3	EXTREME WIND NA- (250C)	20	3	D3	62	-820	2673	62	-820	2673	0	0	0
12	3	EXTREME WIND NA- (250C)	30	1	D11	95	-820	-2688	0	0	0	95	-820	-2688
12	3	EXTREME WIND NA- (250C)	30	2	D22	95	-821	-2687	0	0	0	95	-821	-2687
12	3	EXTREME WIND NA- (250C)	30	3	D33	95	-826	-2686	0	0	0	95	-826	-2686
12	3	EXTREME WIND NA- (250C)	51	1	N1	64	-810	-2655	0	0	0	64	-810	-2655
12	3	EXTREME WIND NA- (250C)	52	1	N11	51	-798	2646	51	-798	2646	0	0	0
13	6	EXTREME ICE	1	1	S1	221	-468	2158	221	-468	2158	0	0	0
13	6	EXTREME ICE	5	1	C1	580	-1507	7515	580	-1507	7515	0	0	0
13	6	EXTREME ICE	5	2	C2	525	-1777	7456	525	-1777	7456	0	0	0
13	6	EXTREME ICE	5	3	C3	469	-1504	7516	469	-1504	7516	0	0	0
13	6	EXTREME ICE	11	1	S11	236	-455	-2171	0	0	0	236	-455	-2171
13	6	EXTREME ICE	15	1	C11	663	-1446	-7564	0	0	0	663	-1446	-7564
13	6	EXTREME ICE	15	2	C22	600	-1758	-7498	0	0	0	600	-1758	-7498
13	6	EXTREME ICE	15	3	C33	557	-1448	-7564	0	0	0	557	-1448	-7564
13	6	EXTREME ICE	20	1	D1	243	-641	2926	243	-641	2926	0	0	0
13	6	EXTREME ICE	20	2	D2	240	-615	2931	240	-615	2931	0	0	0
13	6	EXTREME ICE	20	3	D3	243	-641	2926	243	-641	2926	0	0	0
13	6	EXTREME ICE	30	1	D11	276	-642	-2944	0	0	0	276	-642	-2944
13	6	EXTREME ICE	30	2	D22	274	-645	-2943	0	0	0	274	-645	-2943
13	6	EXTREME ICE	30	3	D33	276	-649	-2942	0	0	0	276	-649	-2942
13	6	EXTREME ICE	51	1	N1	241	-645	-2941	0	0	0	241	-645	-2941
13	6	EXTREME ICE	52	1	N11	229	-629	2929	229	-629	2929	0	0	0
14	9	UPLIFT	1	1	S1	52	-195	899	52	-195	899	0	0	0
14	9	UPLIFT	5	1	C1	302	-1355	6757	302	-1355	6757	0	0	0
14	9	UPLIFT	5	2	C2	252	-1598	6704	252	-1598	6704	0	0	0
14	9	UPLIFT	5	3	C3	202	-1352	6758	202	-1352	6758	0	0	0
14	9	UPLIFT	11	1	S11	58	-185	-884	0	0	0	58	-185	-884
14	9	UPLIFT	15	1	C11	377	-1288	-6736	0	0	0	377	-1288	-6736
14	9	UPLIFT	15	2	C22	321	-1565	-6677	0	0	0	321	-1565	-6677
14	9	UPLIFT	15	3	C33	283	-1289	-6736	0	0	0	283	-1289	-6736
14	9	UPLIFT	20	1	D1	56	-317	1445	56	-317	1445	0	0	0
14	9	UPLIFT	20	2	D2	56	-304	1448	56	-304	1448	0	0	0
14	9	UPLIFT	20	3	D3	56	-317	1445	56	-317	1445	0	0	0
14	9	UPLIFT	30	1	D11	73	-310	-1422	0	0	0	73	-310	-1422
14	9	UPLIFT	30	2	D22	73	-312	-1422	0	0	0	73	-312	-1422
14	9	UPLIFT	30	3	D33	73	-313	-1421	0	0	0	73	-313	-1421
14	9	UPLIFT	51	1	N1	57	-312	-1423	0	0	0	57	-312	-1423
14	9	UPLIFT	52	1	N11	50	-311	1450	50	-311	1450	0	0	0
15	28	CAMBER	1	1	S1	45	-134	617	45	-134	617	0	0	0
15	28	CAMBER	5	1	C1	249	-777	3877	249	-777	3877	0	0	0
15	28	CAMBER	5	2	C2	220	-917	3847	220	-917	3847	0	0	0
15	28	CAMBER	5	3	C3	191	-776	3878	191	-776	3878	0	0	0
15	28	CAMBER	11	1	S11	50	-128	-613	0	0	0	50	-128	-613
15	28	CAMBER	15	1	C11	292	-744	-3893	0	0	0	292	-744	-3893

LC #	WC #	Load Case Description	Set No.	Phase No.	Attach. Joint Labels	Structure Loads			Loads from back span			Loads from ahead span		
						Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)
15	28	CAMBER	15	2	C22	259	-905	-3859	0	0	0	259	-905	-3859
15	28	CAMBER	15	3	C33	237	-745	-3893	0	0	0	237	-745	-3893
15	28	CAMBER	20	1	D1	56	-189	861	56	-189	861	0	0	0
15	28	CAMBER	20	2	D2	56	-181	862	56	-181	862	0	0	0
15	28	CAMBER	20	3	D3	56	-189	861	56	-189	861	0	0	0
15	28	CAMBER	30	1	D11	66	-188	-861	0	0	0	66	-188	-861
15	28	CAMBER	30	2	D22	66	-189	-861	0	0	0	66	-189	-861
15	28	CAMBER	30	3	D33	66	-190	-861	0	0	0	66	-190	-861
15	28	CAMBER	51	1	N1	56	-189	-861	0	0	0	56	-189	-861
15	28	CAMBER	52	1	N11	52	-185	862	52	-185	862	0	0	0
16	8	BLOWOUT DEFLECTION NA+	1	1	S1	48	-136	741	48	-136	741	0	0	0
16	8	BLOWOUT DEFLECTION NA+	5	1	C1	254	-744	4183	254	-744	4183	0	0	0
16	8	BLOWOUT DEFLECTION NA+	5	2	C2	223	-895	4154	223	-895	4154	0	0	0
16	8	BLOWOUT DEFLECTION NA+	5	3	C3	192	-742	4184	192	-742	4184	0	0	0
16	8	BLOWOUT DEFLECTION NA+	11	1	S11	53	-130	-738	0	0	0	53	-130	-738
16	8	BLOWOUT DEFLECTION NA+	15	1	C11	300	-710	-4199	0	0	0	300	-710	-4199
16	8	BLOWOUT DEFLECTION NA+	15	2	C22	265	-883	-4166	0	0	0	265	-883	-4166
16	8	BLOWOUT DEFLECTION NA+	15	3	C33	242	-711	-4199	0	0	0	242	-711	-4199
16	8	BLOWOUT DEFLECTION NA+	20	1	D1	56	-194	1115	56	-194	1115	0	0	0
16	8	BLOWOUT DEFLECTION NA+	20	2	D2	56	-185	1116	56	-185	1116	0	0	0
16	8	BLOWOUT DEFLECTION NA+	20	3	D3	56	-194	1115	56	-194	1115	0	0	0
16	8	BLOWOUT DEFLECTION NA+	30	1	D11	69	-194	-1117	0	0	0	69	-194	-1117
16	8	BLOWOUT DEFLECTION NA+	30	2	D22	69	-196	-1116	0	0	0	69	-196	-1116
16	8	BLOWOUT DEFLECTION NA+	30	3	D33	69	-197	-1116	0	0	0	69	-197	-1116
16	8	BLOWOUT DEFLECTION NA+	51	1	N1	56	-196	-1116	0	0	0	56	-196	-1116
16	8	BLOWOUT DEFLECTION NA+	52	1	N11	51	-190	1116	51	-190	1116	0	0	0
17	8	BLOWOUT DEFLECTION NA-	1	1	S1	48	-183	730	48	-183	730	0	0	0
17	8	BLOWOUT DEFLECTION NA-	5	1	C1	254	-926	4148	254	-926	4148	0	0	0
17	8	BLOWOUT DEFLECTION NA-	5	2	C2	223	-1075	4112	223	-1075	4112	0	0	0
17	8	BLOWOUT DEFLECTION NA-	5	3	C3	192	-925	4149	192	-925	4149	0	0	0
17	8	BLOWOUT DEFLECTION NA-	11	1	S11	53	-177	-728	0	0	0	53	-177	-728
17	8	BLOWOUT DEFLECTION NA-	15	1	C11	300	-890	-4165	0	0	0	300	-890	-4165
17	8	BLOWOUT DEFLECTION NA-	15	2	C22	265	-1061	-4125	0	0	0	265	-1061	-4125
17	8	BLOWOUT DEFLECTION NA-	15	3	C33	242	-891	-4165	0	0	0	242	-891	-4165
17	8	BLOWOUT DEFLECTION NA-	20	1	D1	56	-290	1094	56	-290	1094	0	0	0
17	8	BLOWOUT DEFLECTION NA-	20	2	D2	56	-279	1097	56	-279	1097	0	0	0
17	8	BLOWOUT DEFLECTION NA-	20	3	D3	56	-290	1094	56	-290	1094	0	0	0
17	8	BLOWOUT DEFLECTION NA-	30	1	D11	69	-288	-1097	0	0	0	69	-288	-1097
17	8	BLOWOUT DEFLECTION NA-	30	2	D22	69	-289	-1096	0	0	0	69	-289	-1096
17	8	BLOWOUT DEFLECTION NA-	30	3	D33	69	-291	-1096	0	0	0	69	-291	-1096
17	8	BLOWOUT DEFLECTION NA-	51	1	N1	56	-289	-1096	0	0	0	56	-289	-1096
17	8	BLOWOUT DEFLECTION NA-	52	1	N11	51	-285	1097	51	-285	1097	0	0	0
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	11	1	S11	89	-288	-1568	0	0	0	89	-288	-1568
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	15	1	C11	426	-1230	-6877	0	0	0	426	-1230	-6877
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	15	2	C22	374	-1513	-6820	0	0	0	374	-1513	-6820
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	15	3	C33	339	-1231	-6876	0	0	0	339	-1231	-6876
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	20	1	D1	97	-425	2199	97	-425	2199	0	0	0
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	20	2	D2	96	-406	2203	96	-406	2203	0	0	0
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	20	3	D3	97	-425	2199	97	-425	2199	0	0	0
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	30	1	D11	117	-424	-2203	0	0	0	117	-424	-2203
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	30	2	D22	116	-427	-2202	0	0	0	116	-427	-2202
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	30	3	D33	117	-429	-2202	0	0	0	117	-429	-2202
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	51	1	N1	97	-427	-2202	0	0	0	97	-427	-2202
18	1	BROKEN CONDUCTOR NA+ (250B)-BACK	52	1	N11	89	-416	2202	89	-416	2202	0	0	0
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	11	1	S11	89	-365	-1552	0	0	0	89	-365	-1552
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	15	1	C11	426	-1394	-6846	0	0	0	426	-1394	-6846
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	15	2	C22	374	-1676	-6783	0	0	0	374	-1676	-6783
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	15	3	C33	339	-1396	-6846	0	0	0	339	-1396	-6846
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	20	1	D1	97	-534	2176	97	-534	2176	0	0	0
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	20	2	D2	96	-514	2180	96	-514	2180	0	0	0
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	20	3	D3	97	-534	2176	97	-534	2176	0	0	0
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	30	1	D11	117	-531	-2179	0	0	0	117	-531	-2179
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	30	2	D22	116	-534	-2179	0	0	0	116	-534	-2179
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	30	3	D33	117	-537	-2178	0	0	0	117	-537	-2178
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	51	1	N1	97	-534	-2179	0	0	0	97	-534	-2179
19	1	BROKEN CONDUCTOR NA- (250B)-BACK	52	1	N11	89	-524	2180	89	-524	2180	0	0	0
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	11	1	S11	78	-217	-1593	0	0	0	78	-217	-1593

LC #	WC #	Load Case Description	Set No.	Phase No.	Attach. Joint Labels	Structure Loads			Loads from back span			Loads from ahead span		
						Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	15	1	C11	376	-866	-6787	0	0	0	376	-866	-6787
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	15	2	C22	320	-1153	-6745	0	0	0	320	-1153	-6745
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	15	3	C33	282	-885	-6786	0	0	0	282	-885	-6786
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	20	1	D1	57	-339	2516	57	-339	2516	0	0	0
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	20	2	D2	56	-317	2519	56	-317	2519	0	0	0
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	20	3	D3	57	-339	2516	57	-339	2516	0	0	0
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	30	1	D11	86	-339	-2529	0	0	0	86	-339	-2529
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	30	2	D22	86	-343	-2528	0	0	0	86	-343	-2528
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	30	3	D33	86	-345	-2528	0	0	0	86	-345	-2528
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	51	1	N1	58	-341	-2498	0	0	0	58	-341	-2498
20	3	BROKEN CONDUCTOR NA+ (250C)-BACK	52	1	N11	46	-325	2489	46	-325	2489	0	0	0
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	11	1	S11	78	-440	-1547	0	0	0	78	-440	-1547
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	15	1	C11	376	-1700	-6635	0	0	0	376	-1700	-6635
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	15	2	C22	320	-1966	-6562	0	0	0	320	-1966	-6562
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	15	3	C33	282	-1685	-6639	0	0	0	282	-1685	-6639
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	20	1	D1	57	-746	2430	57	-746	2430	0	0	0
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	20	2	D2	56	-722	2437	56	-722	2437	0	0	0
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	20	3	D3	57	-746	2430	57	-746	2430	0	0	0
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	30	1	D11	86	-745	-2443	0	0	0	86	-745	-2443
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	30	2	D22	86	-746	-2443	0	0	0	86	-746	-2443
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	30	3	D33	86	-751	-2442	0	0	0	86	-751	-2442
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	51	1	N1	58	-736	-2414	0	0	0	58	-736	-2414
21	3	BROKEN CONDUCTOR NA- (250C)-BACK	52	1	N11	46	-725	2405	46	-725	2405	0	0	0
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	11	1	S11	239	-433	-2306	0	0	0	239	-433	-2306
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	15	1	C11	682	-1497	-8223	0	0	0	682	-1497	-8223
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	15	2	C22	614	-1835	-8154	0	0	0	614	-1835	-8154
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	15	3	C33	567	-1498	-8223	0	0	0	567	-1498	-8223
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	20	1	D1	243	-626	3131	243	-626	3131	0	0	0
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	20	2	D2	241	-598	3137	241	-598	3137	0	0	0
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	20	3	D3	243	-626	3131	243	-626	3131	0	0	0
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	30	1	D11	278	-626	-3147	0	0	0	278	-626	-3147
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	30	2	D22	277	-631	-3146	0	0	0	277	-631	-3146
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	30	3	D33	278	-634	-3146	0	0	0	278	-634	-3146
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	51	1	N1	241	-631	-3147	0	0	0	241	-631	-3147
22	4	BROKEN CONDUCTOR NA+ (250D)-BACK	52	1	N11	229	-613	3135	229	-613	3135	0	0	0
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	11	1	S11	239	-528	-2286	0	0	0	239	-528	-2286
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	15	1	C11	682	-1643	-8196	0	0	0	682	-1643	-8196
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	15	2	C22	614	-1980	-8121	0	0	0	614	-1980	-8121
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	15	3	C33	567	-1645	-8195	0	0	0	567	-1645	-8195
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	20	1	D1	243	-741	3106	243	-741	3106	0	0	0
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	20	2	D2	241	-712	3113	241	-712	3113	0	0	0
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	20	3	D3	243	-741	3106	243	-741	3106	0	0	0
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	30	1	D11	278	-740	-3123	0	0	0	278	-740	-3123
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	30	2	D22	277	-743	-3122	0	0	0	277	-743	-3122
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	30	3	D33	278	-748	-3121	0	0	0	278	-748	-3121
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	51	1	N1	241	-743	-3122	0	0	0	241	-743	-3122
23	4	BROKEN CONDUCTOR NA- (250D)-BACK	52	1	N11	229	-727	3111	229	-727	3111	0	0	0
24	6	BROKEN CONDUCTOR (EXTREME ICE)-BACK	11	1	S11	236	-455	-2171	0	0	0	236	-455	-2171
24	6	BROKEN CONDUCTOR (EXTREME ICE)-BACK	15	1	C11	663	-1446	-7564	0	0	0	663	-1446	-7564
24	6	BROKEN CONDUCTOR (EXTREME ICE)-BACK	15	2	C22	600	-1758	-7498	0	0	0	600	-1758	-7498
24	6	BROKEN CONDUCTOR (EXTREME ICE)-BACK	15	3	C33	557	-1448	-7564	0	0	0	557	-1448	-7564
24	6	BROKEN CONDUCTOR (EXTREME ICE)-BACK	20	1	D1	243	-641	2926	243	-641	2926	0	0	0
24	6	BROKEN CONDUCTOR (EXTREME ICE)-BACK	20	2	D2	240	-615	2931	240	-615	2931	0	0	0
24	6	BROKEN CONDUCTOR (EXTREME ICE)-BACK	20	3	D3	243	-641	2926	243	-641	2926	0	0	0
24	6	BROKEN CONDUCTOR (EXTREME ICE)-BACK	30	1	D11	276	-642	-2944	0	0	0	276	-642	-2944
24	6	BROKEN CONDUCTOR (EXTREME ICE)-BACK	30	2	D22	274	-645	-2943	0	0	0	274	-645	-2943
24	6	BROKEN CONDUCTOR (EXTREME ICE)-BACK	30	3	D33	276	-649	-2942	0	0	0	276	-649	-2942
24	6	BROKEN CONDUCTOR (EXTREME ICE)-BACK	51	1	N1	241	-645	-2941	0	0	0	241	-645	-2941
24	6	BROKEN CONDUCTOR (EXTREME ICE)-BACK	52	1	N11	229	-629	2929	229	-629	2929	0	0	0
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	5	1	C1	357	-1290	6866	357	-1290	6866	0	0	0
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	5	2	C2	312	-1537	6815	312	-1537	6815	0	0	0
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	5	3	C3	266	-1287	6866	266	-1287	6866	0	0	0
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	20	1	D1	97	-425	2199	97	-425	2199	0	0	0
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	20	2	D2	96	-406	2203	96	-406	2203	0	0	0
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	20	3	D3	97	-425	2199	97	-425	2199	0	0	0
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	30	1	D11	117	-424	-2203	0	0	0	117	-424	-2203
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	30	2	D22	116	-427	-2202	0	0	0	116	-427	-2202

LC #	WC #	Load Case Description	Set No.	Phase No.	Attach. Joint Labels	Structure Loads			Loads from back span			Loads from ahead span		
						Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	30	3	D33	117	-429	-2202	0	0	0	117	-429	-2202
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	51	1	N1	97	-427	-2202	0	0	0	97	-427	-2202
25	1	BROKEN CONDUCTOR NA+ (250B)-AHEAD	52	1	N11	89	-416	2202	89	-416	2202	0	0	0
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	5	1	C1	357	-1456	6833	357	-1456	6833	0	0	0
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	5	2	C2	312	-1702	6776	312	-1702	6776	0	0	0
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	5	3	C3	266	-1454	6834	266	-1454	6834	0	0	0
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	20	1	D1	97	-534	2176	97	-534	2176	0	0	0
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	20	2	D2	96	-514	2180	96	-514	2180	0	0	0
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	20	3	D3	97	-534	2176	97	-534	2176	0	0	0
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	30	1	D11	117	-531	-2179	0	0	0	117	-531	-2179
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	30	2	D22	116	-534	-2179	0	0	0	116	-534	-2179
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	30	3	D33	117	-537	-2178	0	0	0	117	-537	-2178
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	51	1	N1	97	-534	-2179	0	0	0	97	-534	-2179
26	1	BROKEN CONDUCTOR NA- (250B)-AHEAD	52	1	N11	89	-524	2180	89	-524	2180	0	0	0
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	5	1	C1	300	-916	6762	300	-916	6762	0	0	0
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	5	2	C2	251	-1168	6722	251	-1168	6722	0	0	0
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	5	3	C3	202	-931	6760	202	-931	6760	0	0	0
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	20	1	D1	57	-339	2516	57	-339	2516	0	0	0
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	20	2	D2	56	-317	2519	56	-317	2519	0	0	0
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	20	3	D3	57	-339	2516	57	-339	2516	0	0	0
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	30	1	D11	86	-339	-2529	0	0	0	86	-339	-2529
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	30	2	D22	86	-343	-2528	0	0	0	86	-343	-2528
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	30	3	D33	86	-345	-2528	0	0	0	86	-345	-2528
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	51	1	N1	58	-341	-2498	0	0	0	58	-341	-2498
27	3	BROKEN CONDUCTOR NA+ (250C)-AHEAD	52	1	N11	46	-325	2489	46	-325	2489	0	0	0
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	5	1	C1	300	-1762	6599	300	-1762	6599	0	0	0
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	5	2	C2	251	-1991	6534	251	-1991	6534	0	0	0
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	5	3	C3	202	-1742	6604	202	-1742	6604	0	0	0
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	20	1	D1	57	-746	2430	57	-746	2430	0	0	0
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	20	2	D2	56	-722	2437	56	-722	2437	0	0	0
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	20	3	D3	57	-746	2430	57	-746	2430	0	0	0
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	30	1	D11	86	-745	-2443	0	0	0	86	-745	-2443
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	30	2	D22	86	-746	-2443	0	0	0	86	-746	-2443
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	30	3	D33	86	-751	-2442	0	0	0	86	-751	-2442
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	51	1	N1	58	-736	-2414	0	0	0	58	-736	-2414
28	3	BROKEN CONDUCTOR NA- (250C)-AHEAD	52	1	N11	46	-725	2405	46	-725	2405	0	0	0
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	5	1	C1	592	-1563	8183	592	-1563	8183	0	0	0
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	5	2	C2	532	-1858	8121	532	-1858	8121	0	0	0
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	5	3	C3	471	-1560	8184	471	-1560	8184	0	0	0
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	20	1	D1	243	-626	3131	243	-626	3131	0	0	0
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	20	2	D2	241	-598	3137	241	-598	3137	0	0	0
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	20	3	D3	243	-626	3131	243	-626	3131	0	0	0
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	30	1	D11	278	-626	-3147	0	0	0	278	-626	-3147
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	30	2	D22	277	-631	-3146	0	0	0	277	-631	-3146
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	30	3	D33	278	-634	-3146	0	0	0	278	-634	-3146
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	51	1	N1	241	-631	-3147	0	0	0	241	-631	-3147
29	4	BROKEN CONDUCTOR NA+ (250D)-AHEAD	52	1	N11	229	-613	3135	229	-613	3135	0	0	0
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	5	1	C1	592	-1712	8154	592	-1712	8154	0	0	0
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	5	2	C2	532	-2005	8087	532	-2005	8087	0	0	0
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	5	3	C3	471	-1708	8155	471	-1708	8155	0	0	0
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	20	1	D1	243	-741	3106	243	-741	3106	0	0	0
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	20	2	D2	241	-712	3113	241	-712	3113	0	0	0
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	20	3	D3	243	-741	3106	243	-741	3106	0	0	0
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	30	1	D11	278	-740	-3123	0	0	0	278	-740	-3123
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	30	2	D22	277	-743	-3122	0	0	0	277	-743	-3122
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	30	3	D33	278	-748	-3121	0	0	0	278	-748	-3121
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	51	1	N1	241	-743	-3122	0	0	0	241	-743	-3122
30	4	BROKEN CONDUCTOR NA- (250D)-AHEAD	52	1	N11	229	-727	3111	229	-727	3111	0	0	0
31	6	BROKEN CONDUCTOR (EXTREME ICE)-AHEAD	5	1	C1	580	-1507	7515	580	-1507	7515	0	0	0
31	6	BROKEN CONDUCTOR (EXTREME ICE)-AHEAD	5	2	C2	525	-1777	7456	525	-1777	7456	0	0	0
31	6	BROKEN CONDUCTOR (EXTREME ICE)-AHEAD	5	3	C3	469	-1504	7516	469	-1504	7516	0	0	0
31	6	BROKEN CONDUCTOR (EXTREME ICE)-AHEAD	20	1	D1	243	-641	2926	243	-641	2926	0	0	0
31	6	BROKEN CONDUCTOR (EXTREME ICE)-AHEAD	20	2	D2	240	-615	2931	240	-615	2931	0	0	0
31	6	BROKEN CONDUCTOR (EXTREME ICE)-AHEAD	20	3	D3	243	-641	2926	243	-641	2926	0	0	0
31	6	BROKEN CONDUCTOR (EXTREME ICE)-AHEAD	30	1	D11	276	-642	-2944	0	0	0	276	-642	-2944
31	6	BROKEN CONDUCTOR (EXTREME ICE)-AHEAD	30	2	D22	274	-645	-2943	0	0	0	274	-645	-2943
31	6	BROKEN CONDUCTOR (EXTREME ICE)-AHEAD	30	3	D33	276	-649	-2942	0	0	0	276	-649	-2942

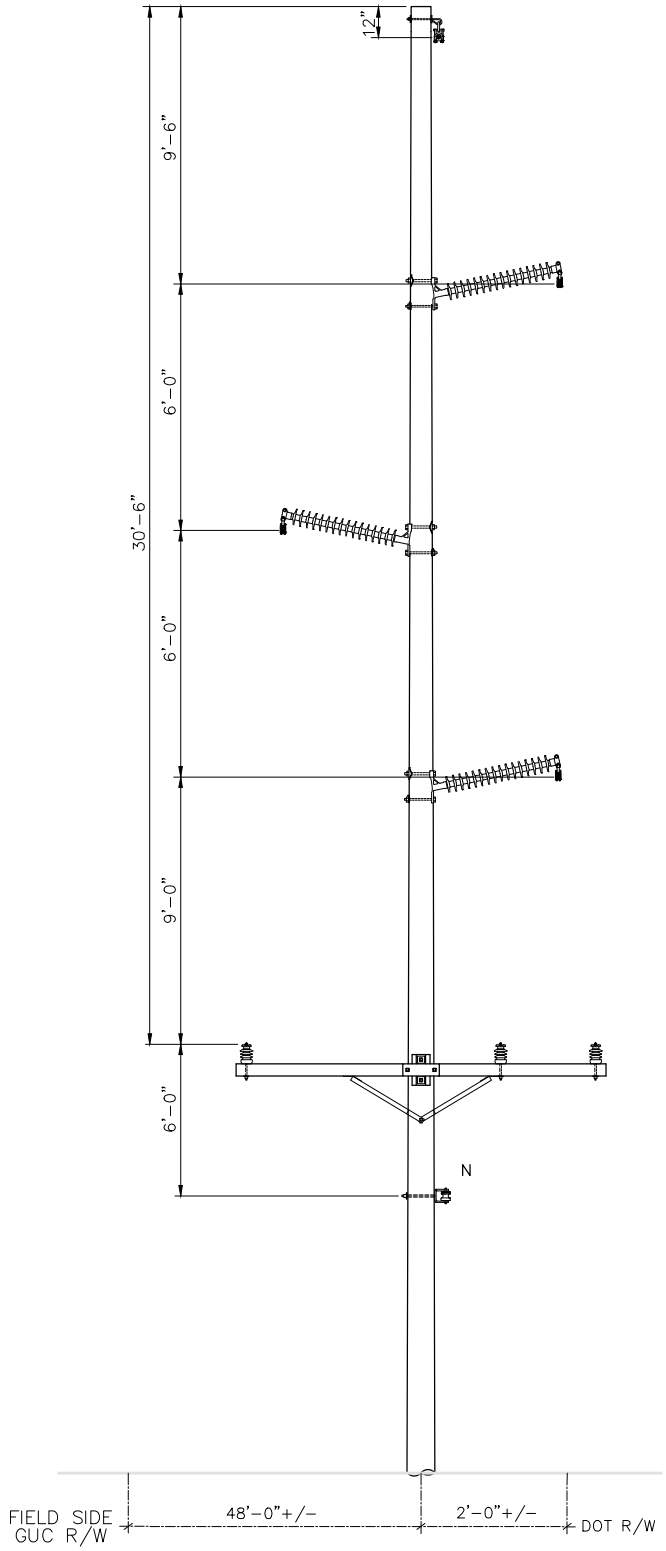
LC #	WC #	Load Case Description	Set No.	Phase No.	Attach. Joint Labels	Structure Loads			Loads from back span			Loads from ahead span		
						Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)	Vert. (lbs)	Trans. (lbs)	Long. (lbs)
31	6	BROKEN CONDUCTOR (EXTREME ICE)-AHEAD	51	1	N1	241	-645	-2941	0	0	0	241	-645	-2941
31	6	BROKEN CONDUCTOR (EXTREME ICE)-AHEAD	52	1	N11	229	-629	2929	229	-629	2929	0	0	0

ATTACHMENT C

ATTACHMENT NOT APPLICABLE

ATTACHMENT D

MISCELLANEOUS DRAWINGS



TANGENT STRUCTURE

STEEL POLE
115 kV TRANSMISSION
SINGLE POLE POST INSULATORS

GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

115 kV TRANSMISSION
TP-115(S) (POLE FOR POLE)
TYPICAL CONDUCTOR SEPARATION

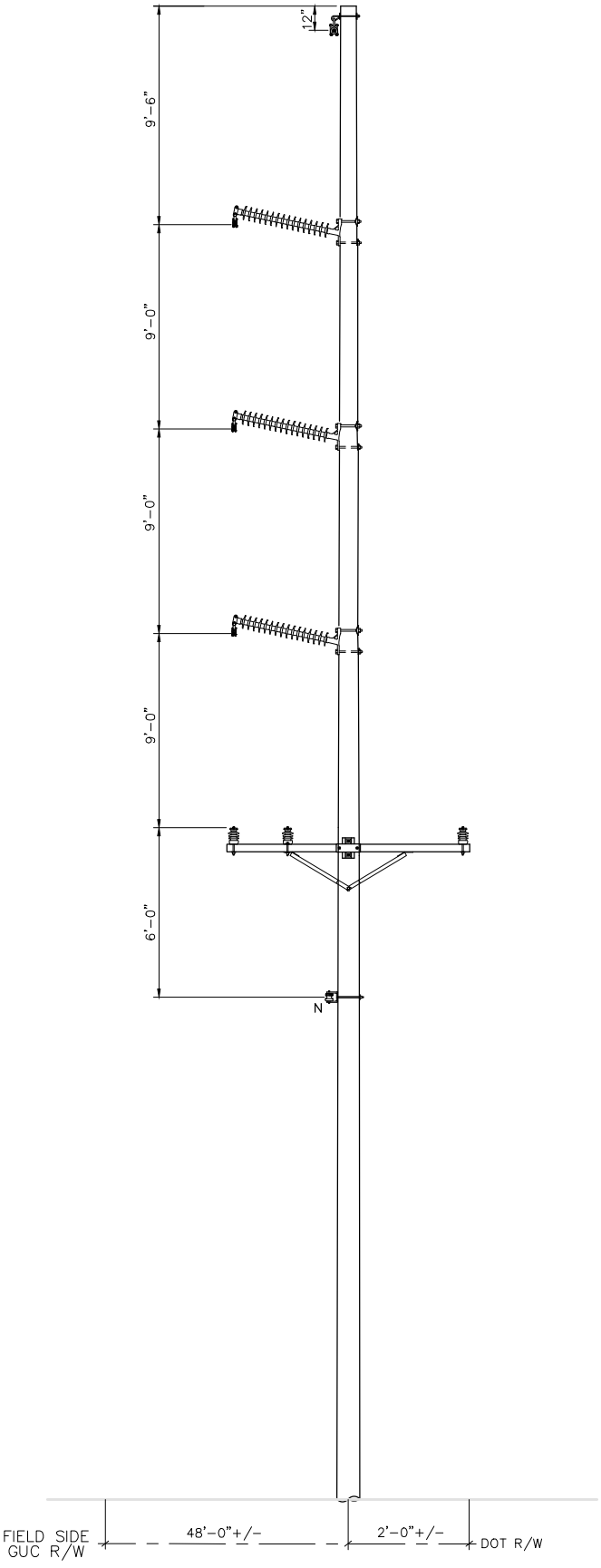
Booth & Associates, LLC
5811 Glenwood Avenue | Raleigh, NC 27612 CONSULTING ENGINEERS NC F-0221

DWN.	AAI	DATE:	04/18/17
CKD.	ARD	APPD.	RSY
SCALE:	NTS		

DATE	REVISION	DATE	REVISION

DWG. NO.
S-1A

1408097TCS



TANGENT TO LIGHT
ANGLE 0° – 7°

STEEL POLE
115 kV TRANSMISSION
SINGLE POLE POST INSULATORS

GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

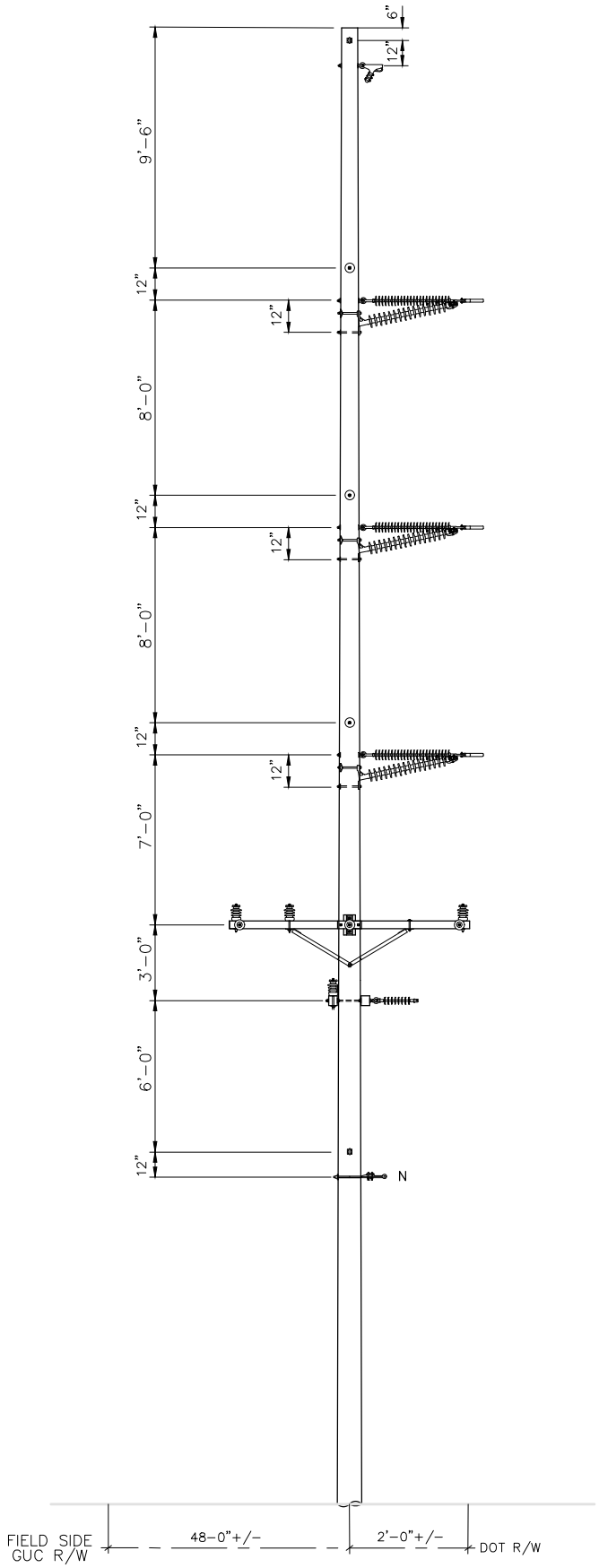
115 kV TRANSMISSION
TP–115B2–A(S) (POLE FOR POLE)
TYPICAL CONDUCTOR SEPARATION

Booth & Associates, LLC
5811 Glenwood Avenue | Raleigh, NC 27612 CONSULTING ENGINEERS NC F-0221

DWN.	AAI	DATE:	04/18/17
CKD.	ARD	APPD.	RSY
SCALE:	NTS		15–8097

DATE	REVISION	DATE	REVISION

DWG. NO.
S–1B



DOUBLE DEADEND
LIGHT TO MEDIUM ANGLE STRUCTURE

STEEL POLE
115 kV TRANSMISSION
SINGLE POLE SUSPENSION INSULATORS

GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

115 kV TRANSMISSION
TP-5AA(S) (POLE FOR POLE)
TYPICAL CONDUCTOR SEPARATION

Booth & Associates, LLC
5811 Glenwood Avenue | Raleigh, NC 27612 CONSULTING ENGINEERS NC F-0221

DWN.	AAI	DATE:	04/18/17
CKD.	ARD	APPD.	RSY
SCALE:	NTS		15-8097

DATE	REVISION	DATE	REVISION

DWG. NO.
S-1C

APPENDIX

VICINITY MAP

GREENVILLE UTILITIES COMMISION
GREENVILLE, NORTH CAROLINA

DICKINSON AVENUE TO FROG LEVEL ROAD
VICINITY MAP

Booth & Associates, LLC
5811 Glenwood Avenue | Raleigh, NC 27612 CONSULTING ENGINEERS NC F-0221

DWN. AAI	DATE: 04/03/17		DWG. NO.
CKD. GSB	APPD. RSY		
SCALE: 1" = 4000'	FILE: 158097VM		VM-1
JOB NO. 15-8097	DATE	REVISION	
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